HISTORICAL SYNOPSIS, RECORDATION, AND ASSESSMENT OF GRAVESTONES IN THE TOGUS WEST NATIONAL CEMETERY, TOGUS, MAINE

Chicora Research Contribution 542

HISTORICAL SYNOPSIS, RECORDATION, AND ASSESSMENT OF GRAVESTONES IN THE TOGUS WEST NATIONAL CEMETERY, TOGUS, MAINE

Prepared By:
Michael Trinkley, Ph.D.
Debi Hacker
Nicole Southerland

In Association With:

AMEC
3200 Town Point Drive, Suite 100
Kennesaw, GA 30144

Under Contract With:

National Cemetery Administration
U.S. Department of Veterans Affairs
810 Vermont Avenue, NW
Washington, DC 20420

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Chicora Foundation, Inc.
PO Box 8664
Columbia, SC 29202
803-787-6910
www.chicora.org

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MANAGEMENT SUMMARY

The Togus National Cemetery is located in Kennebec County, in the town of Chelsea, Maine, on the grounds of what historically was known as the Eastern Branch of the National Asylum (later changed to Home) for Disabled Volunteer Soldiers (NHDVS). The institution became part of the Veterans Administration (VA) in July 1930 when all agencies administering benefits to veterans were consolidated and today the cemetery is within the grounds of the VA Maine Healthcare System, Togus.

The Home's burials are divided between the older West Cemetery and a more recent East Cemetery, with a combined area of 31 acres. The West Cemetery was established in 1865 and moved to its present location west of the home about 1867; it closed for interments in 1936. To continue providing burial space, the East Cemetery received burials as early as 1902, although it was primarily used after 1936 and closed for interments in 1961.

This work, under contract with AMEC, is performed for the VA and is part of a much larger effort to upgrade the appearance of the West Cemetery. Work anticipated includes addressing drainage issues and the raising, realigning, and resodding of the cemetery. One specific task included a historical synthesis of the cemetery. This work included a review of previously developed documents, as well as a brief examination of sources available at the facility's library and archives, the National Archives, the Maine State Archives, the Maine State Library, and other sources.

A second task was a survey of all headstones in the cemetery, as well an assessment of existing conditions. The survey included color digital photography of all existing stones, taken to the standards recommended by the National Register of Historic Places. Also included was a complete transcription of the existing stones. Both photographs and transcriptions were keyed to a detailed survey plan of the cemetery prepared by AMEC. The transcriptions were reconciled with a variety of historical documents, including the NHDVS Registers (1866-1938) for Togus and the NHDVS Burial Registers (including both the original hand written and subsequent typescript versions). The typescript version was used as little as possible since it includes a variety of transcription errors. We anticipated using the Headstones Provided for Deceased Union Civil War Veterans (1879-1903), but we found this was redundant.

One result of this aspect of the work is a Microsoft® Office Excel® spreadsheet of the cemetery and all of the stones currently present. This spreadsheet is available on a CD appended to this report. Also appended are a series of DVDs that include photographs of all stones in the cemetery, as well as the maps prepared for the cemetery.

The assessment included a visual examination of all stones, as well as limited RILEM tests (RILEM Test Method II.4) to examine the rate at which water moves through the different stones. Petrographic analyses were conducted of the early marble stones used by the Home prior to the adoption of the standard government issued stones. A battery of soil tests were also performed for three sections of the cemetery in order to characterize the soils present.

The final task of this study was to provide recommendations on the appropriateness of efforts to raise and realign the stones, with special attention devoted to those early stones predating the standard government issued stones. This study concludes that the stones would benefit from being raised to restore this original position in the turf, but specifies that the work be under the direct control of a conservator who would simultaneously repair and reset those stones needing additional conservation treatment.

Recommendations are made regarding any need to eventually replace stones in the cemetery, focusing on the need to maintain the integrity of the different sections by closely replicating original, historic fabric. Additional recommendations are made regarding critical conservation treatments to the 1868 vault in the cemetery.

Finally, recommendations are made concerning the historic landscape, focusing on issues such as the need to maintain the historic trees, replant historically appropriate trees, and adopt landscape maintenance methods, such as the use of organic fertilizer, that will promote the preservation of the cemetery's stones.

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Introduction

The Eastern Branch of the National Home (formerly Asylum) for Disabled Volunteer Soldiers (NHDVS), today the Togus Veterans Administration (VA) Medical Center, is situated on about 506 heavily wooded areas in Kennebec County, Maine (Figure 1). It is about 5 miles southeast of Augusta, Maine and about 50 miles northwest of Maine's largest city, Portland.

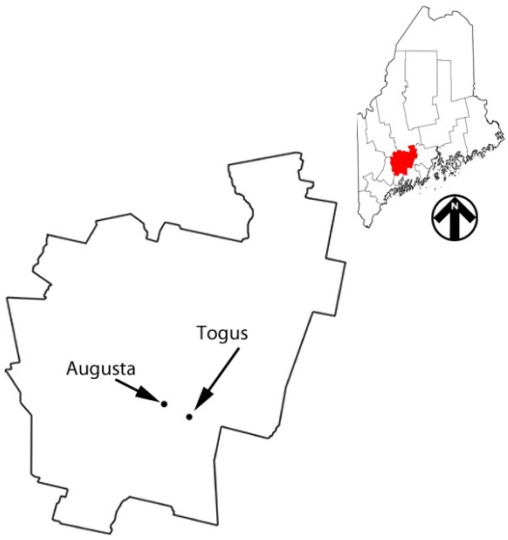


Figure 1. Location of Kennebec County in Maine.

The NHDVS was created by Congress in 1865 to provide support and assistance to the large number of disabled Civil War soldiers attempting to reintegrate into American society. The Eastern Branch was established in November 1866 as the first of what would eventually become 11 facilities. Using a pre-existing summer resort in Togus, Maine, the home operated until 1930 when the NHDVS was absorbed into the newly created Veterans Administration and Togus became the Department of Veterans Affairs Medical and Regional Office Center.

The Director's Quarters and a surrounding 1 acre parcel were placed on the National Register of Historic Places in 1973. In 2004 the VA and National Park Service (NPS) determined that Togus did not retain sufficient integrity to be considered for National Historic Landmark status (Julin 2007). Nevertheless, the entire 506 acre property – including the West Cemetery – has been evaluated for its National Register status, determined eligible for inclusion on the National Register, and a draft nomination has been prepared (Edgington et al. 2011).

Monuments in the Western Cemetery at Togus include two sizes of recessed shield markers (used for Civil War Union and Spanish-American War soldiers), several different versions of the upright marble General Services stones, and a stone unique to Togus that was purchased by the NHDVS consisting of a thin marble die in a granite socket base (Figure 2).

Project Description

The VA's National Cemetery Administration (NCA), which has responsibility for the Togus National Cemeteries, has determined that the West Cemetery may require raising and realigning, as part of a larger project providing improvements at the cemetery. Raising and realigning is the process of removing the stones, sometimes grading the cemetery, and then resetting the monuments, ensuring that the headstones are aligned in accordance with the section plan or historic pattern and are set at the proper height. Recognizing that not only is the cemetery eligible for listing on the National Register, but also that many of the monuments are unique in NCA cemeteries, the VA determined that a careful conservation assessment of the monuments would be required prior to any rehabilitation of the property.

Figure 2. Marble dies set in granite sockets characterize the earliest stones at the West Cemetery.

As a result, the VA contracted with AMEC E&I, Inc. to provide planning assistance and AMEC contacted Chicora to assist in the conservation assessment needs of the cemetery under the agreement.

The specific tasks included a historic synthesis of the Togus West Cemetery, completion of a transcription of all stones in the cemetery, photographic recordation of all stones, cross reference of the stone data with burial data to reconcile any errors or omissions, a conservation assessment of the various stones, and recommendations on how best to treat stones, including comments on the proposed raise and realign program.

To achieve these goals, Chicora conducted historic research at the Togus facility, in Augusta, Maine, at the State Library and State Archives, and also obtained additional historical documentation from other facilities, including the National Archives. The resulting documentation helps place the cemetery in a broader context within the NHDVS. Chicora staff spent two weeks on-site compiling a complete transcription of all stones. Accompanying the transcription work, each monument was photographed to include the engraved face as well as the location of any numbering system (often either on the top of the stone or on the reverse).

Additional photos were taken where necessary to document other damage or condition concerns, such as cracking, spalling, or weathering. Photographs were taken using the standards established by the National Register of Historic Places for digital documentation (http://www.nps.gov/nr/publications/guidance/Photo_Policy_final.pdf). Specifically, all photographs are minimally two megapixels (1200 x 1600 pixel image) at 300 dpi and are saved as tiff images.

The transcription data is provided as a Microsoft® Office Excel® spreadsheet that incorporates information on the section; row; stone number; first, middle, and last name as appearing on the stone; full transcription; type of marker; size of the marker (and base where appropriate); and condition of the marker. Information on size was taken on only representative examples since there is great uniformity in all government markers.

Transcriptions were compared to the stone photos as quality control.

In order to reconcile any errors, the generated files were compared to those provided by AMEC's survey team. In addition, each stone transcription was also compared to one or more of three historical documents. The first was the NHDVS Register for Togus, covering the period from 1866-1938 (National Archives Microfilm Publication M1749). This document lists all individuals admitted into the Home and provides a check on the individual's name and spelling, including any aliases. Often the death date is listed, as well as information on the burial location. The second historical document is the card file known as "Headstones Provided for Deceased Union Civil War Veterans, ca. 1879 – ca. 1903" (National Archives Microfilm Publication M1845). These typically provide the name; rank, company, and regiment; grave number; and death

date. A final document consulted was the handwritten Togus NHDVS burial book (National Archives Microfilm Publication M1749). This document provides the section, row, name, date of death, and location of interment. The handwritten document was chosen over the typescript version since we felt that the original document would be free of transcription errors and provide more reliable data.

These three documents provide redundant data and we did not feel it was necessary to check all three. Our goal was to check what was necessary in order to eliminate the vast majority of errors and ensure that the final spreadsheet provides the best possible information concerning the Togus burials.

Figure 3. Debi Hacker conducting the stone-by-stone transcription, while Nicole Southerland photographed each stone.

Readers must understand, however, that our spreadsheet transcription reflects what is on the stone. Thus, if "Thos." is shown on the stone, "Thos." will be shown on the transcription, not Thomas. If there is a disagreement between the stone and the various historical documents, that disagreement will be shown in the historical documents columns.

In spite of our best efforts, we cannot make authoritative statements regarding who is buried in a particular grave. Ultimately we must accept the accuracy of the ledgers and documents used. We have no independent means of verifying who was placed in what grave.

The conservation assessment relied primarily on a visual assessment of each stone. Some issues, such as breaks or cracks, are clear and straight forward. Others were found to be far less so.

For example, we originally anticipated examining soiling, but found that not only was this a subjective issue with the assessment varying between assessors, but that it also changed during the survey. Stones that were initially "clean" subsequently became splattered with soiling after a protracted rain mid-way during the assessment. Essentially all stones are soiled to some degree.

Similarly, we also initially noted mower damage, but soon discovered that virtually every stone in the cemetery evidenced either mower or nylon string trimmer damage. While the proportion of such damage is high in virtually all cemeteries we examine (throughout the country), this damage was especially heavy at Togus. We are not familiar with the long-term maintenance practices that may be associated with this damage.

We also routinely note if stones are tilted or sunk. A very large proportion of the Togus West Cemetery stones are either sunk or tilted. The degree of displacement, however, tends to be relatively minor from a conservation perspective. We tend to note sinking only if it precludes reading the inscription – and this occurred in only a small number of cases. Likewise, we only recommend resetting if a stone is tilted 15-20° since it is only that degree of tilt that can result in

a stone breaking from its own weight. We realize that the VA has a different standard. Nevertheless, we made note only if the movement was a threat to the stone or precluded reading of the inscription.

In addition to visual observations, we also conducted a simple Rilem tube test to measure the rate at which water moves through several types of stone in the cemetery. We also contracted for a more detailed petrographic analysis of the early NHDVS marble monuments. This serves to characterize the marble and provide some clues on the source of the stone, as well as its weatherability. Finally, we also obtained soil tests that not only provide information appropriate for improving the cemetery's turf appearance, but also help us determine if the soils are likely causing damage to the monuments.

Environmental Setting

The Togus West Cemetery is situated at the western edge of the VA property on a south facing slope bordering Hollowell Road. The bulk of the extant – and historic – structures, as well as the Togus East Cemetery, are situated in a valley area to the east. Elevations in the valley area range from 80 to 90 feet above mean sea level (AMSL), while in the West Cemetery elevations range from about 230 feet AMSL at the southern edge to about 290 feet AMSL at the northern limit.

This portion of Maine has received various physiographic and ecological characterizations. Most recently it has been identified as part of the Acadian Plains and Hills known as the Central Maine Embayment or Laurentian Plains and Hills. The region is

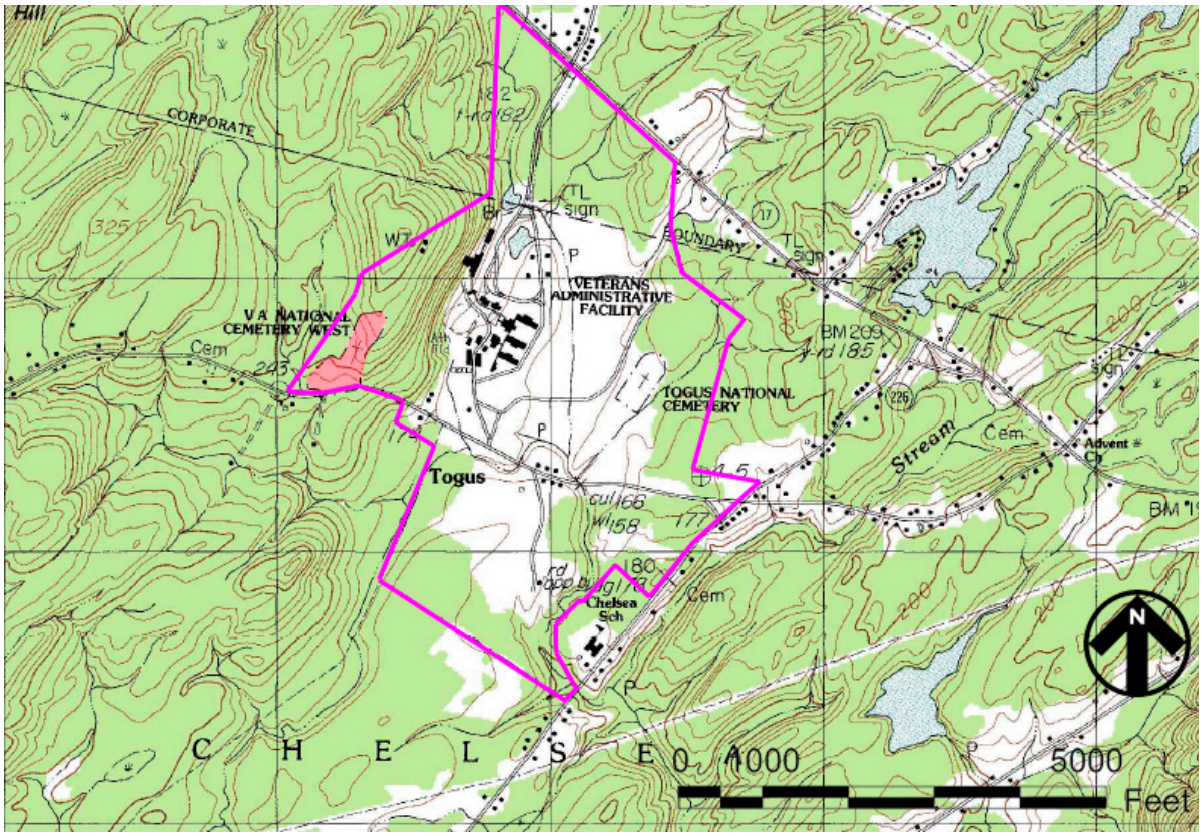


Figure 4. Portion of the Togus Pond 1988 USGS topographic map showing the VA facility vicinity. The Togus West Cemetery is shown in red. The *approximate* VA boundary is shown in purple.

characterized by rolling plains with some hills, numerous lakes and ponds, and some large river valleys. About a mile to the northwest of the cemetery is Pleasant Hill, while about 2.5 miles to the northeast is Togus Pond. The Central Maine Embayment also possess low to moderate gradient streams and mainstem rivers with gravel, cobble, boulder, and bedrock substrates. The various lakes and wetlands were created by glacial processes.

The particular drainage of the area was to cause problems as early as 1907,

> The grounds at Togus are drained by a brook known as Greely Pond Brook, which rises in a small pond about a mile and half north of the Home. It flows in a southerly direction until just before it reaches the settlement where it empties into an artificial pond about two hundred by three hundred feet . . . which is used for an ice pond to supply ice to the Home (Brann and Wilson 1907:2).

As this creek cuts through the Home property it is straight and the course is "free from ledge and rock." To the south the creek becomes winding and the bed "becomes one of solid ledges and loose rocks" (Brann and Wilson 1907:3). Since the creek was used for sewage disposal this caused problems throughout the historic period. Flow was variable during the different seasons, the cross section of the creek allowed "sewage to collect in pools and remain in a more or less state of stagnation," and often sewage also collected on the bed (Brann and Wilson 1907:4).

The soils of the Togus West Cemetery are classified as Paxton-Charlton very stony fine sandy loams, 8 to 15% slopes. These sloping soils are found on smoothly rounded glacial hills. Paxton soils are well drained, formed in deep glacial till consisting of mica, schist, gneiss, and granite. They have a hard, compact layer about 2 feet below the surface. Erosion is not uncommon, especially in areas that have been cultivated. The Charlton soils are similar, consisting of deep, well-drained soils formed on friable to firm glacial till of schist, granite, and gneiss. While similar to the Paxton soils in terms of texture, color, and mineralogy, the Charlton soils lack the hard, compact layer that is typical of the Paxton Series. Both soils tend to be acidic. While the depth to bedrock in both soils is typically over 5 feet, excavation would be difficult and both would contain abundant rock (Faust and LaFlamme1978:10-11, 18-20).

The geology of this area is characterized by Quaternary till and marine deposits, sandy loamy till, glaciomarine silt and clay; and eskers and kame terraces. The associated rocks tend to include various metamorphosed calcareous sandstones, interbedded sandstones, impure limestones, granites, and various metavolcanic rocks. Bedrock geology documents a wide range of complex geologic processes. In the Togus area bedrock consists primarily of Silurian and Devonian phyllite and schist. Toward Augusta are Ordovician, Silurian, and Devonian intrusive igneous rocks and while many rocks are present, granites are the most common (Flanagan et al. 1999: 7, 10).

Kennebec County had three historic granite quarries. Two, known as the Stinchfield and Longfellow works, were situated about 2.5 miles northwest of Hollowell (Dale 1907:117). The granite from both was light gray with a fine texture. The quarries were opened about 1826 and by the turn of the century the Longfellow

Figure 5. Granite quarries in the Hallowell area (Rand 1958:48).

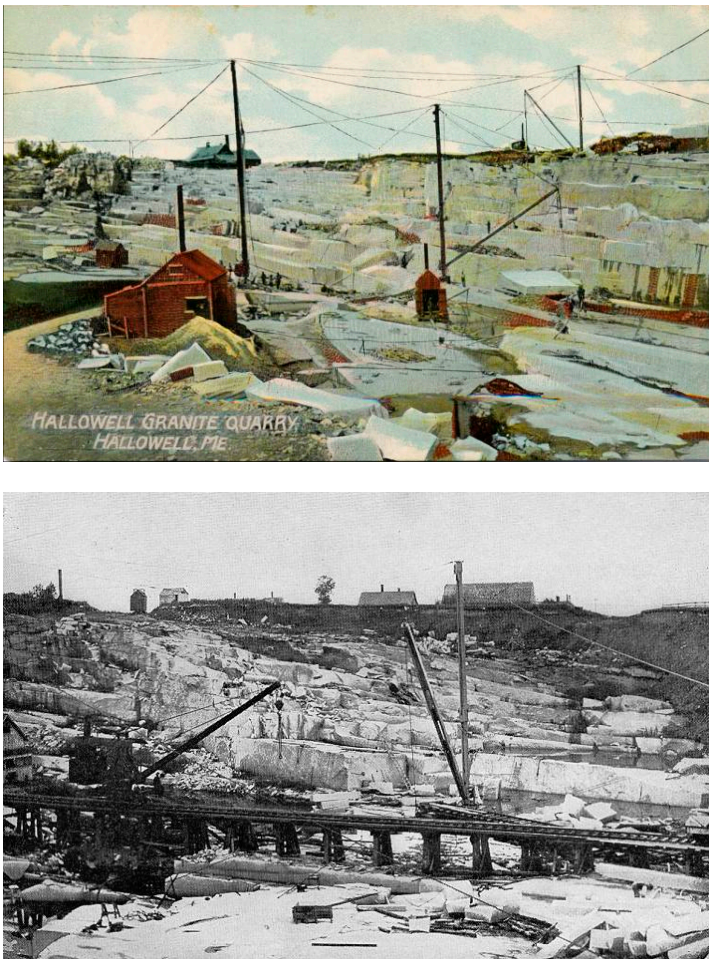


Figure 6. Hallowell quarries. At the top is a ca. 1900 postcard showing an unspecified quarry. Below is a 1907 photograph of the Stinchfield Quarry (Dale 1907).

quarry was filled with about 20 feet of water and was no longer operated. The granite was used not only in buildings, but because of the fine grain, Hallowell granite was also used for sculpture (Dale 1907:119). Monuments using this granite include the New York State monument at Gettysburg, Pennsylvania and the Soldiers' monument at New Haven, Connecticut.

The third operation was the Tayntor or Marvin Quarry, 2 miles north-northwest of Hollowell (Dale 1907:120). Stone from this quarry is virtually identical to the Longfellow and Stinchfield quarries. Tayntor was operating by at least 1840 and produced the granite for the General Slocum monument at Gettysburg, Pennsylvania, the State of Maine monument at Andersonville, and the New York State monument at Lookout Mountain.

The natural vegetation of the region consists of a transitional white pine-mixed hardwood forest ecosystem. The White pine-mixed conifer forest is dominated by white pine with lesser amounts of red spruce, hemlock, and red maple. The hardwood forests may include examples of red oak-northern hardwoods-white pine forest; beech-birch-maple forest; and oak-pine forest with red oak, white pine, red maple, and paper birch. In low, floodplain areas a silver maple floodplain forest occurs with silver maple, red maple, elm, black ash, and some bur oak.

Much of this original vegetation has been lost, being replaced with mixed forest, deciduous forest, pasture land, and some minor cropland. Urban and rural residential development occurs over much of the region, typically with a dense road network. One of the most significant industries is the region's timber. The harvesting of forest products creates cyclic changes in the ecosystem (Moreland 2011).

The climate of the Central Maine Embayment is relatively moderate, being transitional between the coastal climates and inland continental regions. It is generally classified as continental as a result of the prevailing westerly winds. The region has changeable weather with wide ranges in diurnal and annual temperatures, distinct seasonal trends that vary from year to year, and an equable distribution of precipitation throughout the year.

Precipitation ranges from 40 to 50 inches a year. January temperatures range from about 8° to 29° F, while summer temperatures range from 58° to 80°F. There are typically about 140 to 170 frost free days in the growing season, depending on topography and other features.

Methods

Historical Research

Our effort to compile a synthesis of the West Cemetery history was not exhaustive, but rather was intended to provide a context for the broader discussions. We relied extensively on secondary sources, although our research did include the Togus VA Library and Archives, the Maine State Library, and the Maine State Archives.

Searches were conducted for resources at the Maine Historical Society and the National Archives. Neither institution appeared to hold materials that would be of significant assistance. As one researcher euphemistically explains, "records such as official correspondence that might shed light on the Board of Managers' decision-making processes and year-by-year changes in the properties were lost during the administrative transition to the Veterans Administration" (Julin 2007:3). As a result the National Archives collection of NHDVS materials is exceedingly limited.

This research also revealed that no one has a good handle on the resources that may still be present at the Togus facility. While efforts are being made to organize library and archival materials, this effort appears to be receiving limited financial support and the materials are, at best, loosely organized. The Engineering Department has no index of its plan files and while we were told that no materials concerning the cemetery existed, the researchers at Hardy Heck Moore, Inc. had gone through the plan files, identifying several important cemetery plans.

Our work has also found that the internal publication, *History of Togus: First 100 Years* included unsourced materials that we were never able to identify. This suggests that there may be documentation that has not yet been identified.

While this historical research has not made any major new discoveries regarding the Togus West cemetery, it does compile and catalog our current knowledge regarding this site. Future researchers may benefit by focusing on areas not previously explored and, in particular, taking the effort to more fully explore resources that may still be present at the Togus facility. Other documents not incorporated in this study include those present at the Department of Veterans Affairs Central Library in Washington, DC.

Transcription

Each section was transcribed by hand, primarily by one individual, Debi Hacker, using a standardized form. This form was designed for easy transfer to Microsoft® Office Excel®, as well as easy subsequent manipulation.

Initial data included the section (A-L, P), row, and stone number. For some stones the number was legible; for many others we relied on the AMEC survey plan of the cemetery in which each stone was identified by number. The individual's name was broken into last, first, and middle for ease of alphabetical sorting.

Names were recorded precisely as identified on the stone; for example "Thos.", not "Thomas". Punctuation was similarly recorded exactly as found on the stone, resulting in some odd usage. The information beyond the name was recorded in a column identified as "Other," and this often included details regarding branch of service, regimental information, rank, and war service. Date of death is found on a relatively small proportion of the markers. This information was recorded precisely as found on the stone; maintaining spelling, punctuation, and abbreviations. Lines were separated by "/". In some cases the listing of the name first interrupted the flow the stone; where this occurred it was noted by using "//".

The type of stone was identified using a series of letters. "A" identifies the government recessed shield stone used for individuals who died in the Civil War, Revolutionary War, War of 1812, Mexican War, Indian Campaigns, and Spanish-American War. These "Civil War" type stones are found in two different widths at Togus, but these were not further indicated (they are clearly identifiable using the photographs). "B" represents stones with a carved shield outline.

These are modern replacement stones provided by the VA prior to the ability to obtain more historically correct stones. "C" represents the unique stones placed in the cemetery prior to the availability of government stones. These are rectangular marble stones set in a granite socket. "D" was used to identify the general service stones. These have no shield and were used from the First World War on. Initially only two religious symbols were available –the Latin Cross for the Christian faith and the Star of David for the Jewish faith (today there are 48 symbols). We did not distinguish between those stones with and without religious emblems (only the Latin cross was identified at Togus). Finally, "E" was used to identify commercial monuments. The bulk of these are die on bases, but the letter was used for any non-military stone or monument present.

Figure 7. Examples of stone types from the West Cemetery. Upper left, Type "A" or the Civil War type with recessed shield. Upper right, Type "B" or modern Civil War replacement. Lower left, Type "C" or the original stone design used at Togus. Lower right, Type "D" or general issue stone.

Random stones and, where present, bases were measured and this data was entered on the forms. All measurements are in inches since this allows easy averaging by stone type. Measurements were taken to the nearest ¼ inch.

A series of columns were then devoted to noting evidence of breakage, cracking, spalling, surface erosion, chipping, soiling, and sinking or tilting. Sinking was noted only if some portion of the stone was unreadable or if a stone with a base had a significant portion of that base below grade. Similarly, tilting was noted only if the tilt was greater than 15°. There was an additional free form column for other evidence of damage or deterioration.

It is important to note that our list is correct in so far as the stone itself is correct. Moreover, our work cannot determine who is buried in the grave – only who the stone claims is present.

In order to further verify stone data, we compared the transcriptions against three historic record collections, focusing on the name, death date, and grave number.

The first collection is that of the Register for the National Homes for Disabled Volunteer Soldiers, reflecting data from 1866 through 1938 (National Archives Microfilm Publication M1749). These records, begun when an individual entered the Home, recorded his name (including any aliases), personal information, military history, disability, and next of kin. It traced his progress through the Home, noting his discharges, transfers, and readmissions. It also typically noted his death, as well as

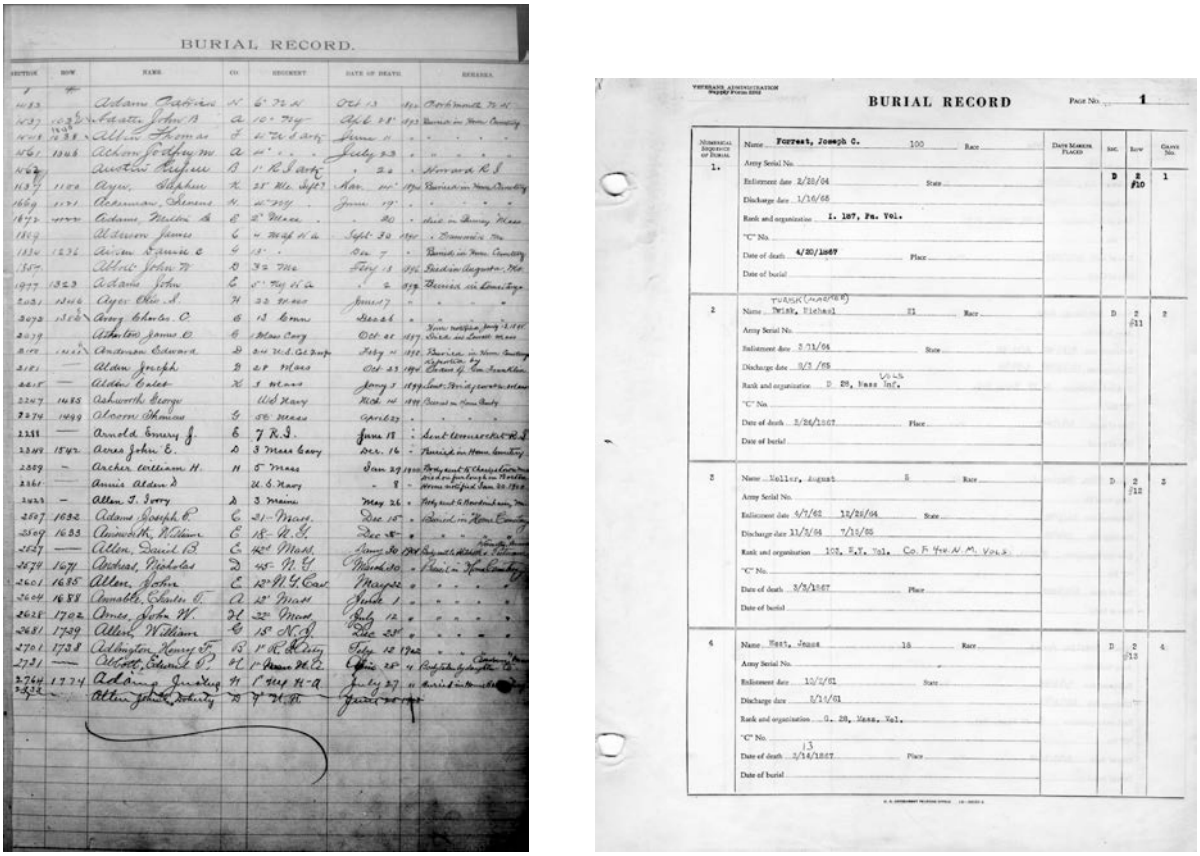


Figure 8. Burial journals from Togus. On the left is a page from the original, hand written journal used through about 1932. On the right is a typescript journal page that incorporated earlier information and continued until the cemeteries were closed.

where the individual was buried.

The second collection consulted was the card file known as "Headstones Provided for Deceased Union Civil War Veterans, ca. 1879 – ca. 1903" (National Archives Microfilm Publication M1845). These are cards compiled by the Quartermaster Department while they were responsible for the preparation of stones for Civil War veterans. The cards typically provide the name; rank, company, and regiment; grave number; and death date. They provide a good check on whether the stone accurately reflects what was ordered to be placed on it.

A final document consulted was the handwritten Togus NHDVS burial book (National Archives Microfilm Publication M1749). This document provides the section, row, name, date of death, and location of interment. It is organized by first letter of last name and then by date/grave number. While certainly not as convenient as the typescript ledgers that provide very similar information, this earlier, handwritten document was chosen since we felt it would contain less errors and provide more reliable data. When the typescript burial book is examined, we find that a number of errors were introduced by clerks who were not able to easily read the handwriting of their predecessors.

It was, however, still necessary to occasionally use the typescript ledger since the handwritten document begins in 1892 and stops at 1932 – suggesting that there was an earlier ledger for the period from 1866 through 1892 and that the hand written ledger was no longer maintained once the typescript began.

In addition, there are some additional peculiarities that researchers should be aware of. The first is that the handwritten ledger does not include any of the C-Extension graves, although some of the names are found in a note attached to the cover of the ledger.

Our handwritten transcriptions were added to the Excel® spreadsheet after the conclusion of the field investigation. As quality control, each transcription was compared with the stone photograph. After each section was completed it was printed and proofread as an additional quality control. The section list was compared with the survey list provided to us by AMEC and we again verified that all stones identified in the survey were accounted for.

Photography

All stones in the West Cemetery were photographed using either a Nikon D70 6.24 megapixel or Nikon D50 6.3 megapixel camera using moderate zone lenses. Photographs were saved using the cameras' highest JPEG quality setting. Images were then saved in an uncompressed TIFF format, and renamed to reflect the cemetery, section, row, and stone number. This process fully complies with the specifications for digital photography developed by the National Register of Historic Places (http://www.nps.gov/nr/publications/guidance/Photo_Policy_final.pdf).

Figure 9. Example of a stone photograph. This specimen is from Section C-Ext, Row 1, Grave Number 4004.

The images are appended to this report using a series of DVD-R disks. Copies of the photographs were provided directly to the client on Kodak DVD-R Archival Gold disks.

The photographs were taken using a mug board that included a scale, as well as color bars useful for more precise color correction.

Initially the scope was written requiring that each stone receive two photographs: one of the front and one of the reverse. This specification was developed assuming that the stones were numbered on the reverse, as is common in many VA cemeteries. However, few of the Togus West stones are numbered on the reverse. Far more common are numbers either on the top of the stone or, occasionally, on the front. As a result, the specifications were altered to require that at least the front of the stone be recorded, combined with at least one additional photo of the number, if located somewhere other than on the front.

As a practical matter many stones received additional photos, documenting conservation problems such as spalling, cracking, or breakage.

Testing

On-site testing consisted of Rilem tubes, following the protocol established by RILEM Test Method II.4. This provides a simple means for measuring the rate at which water moves through porous materials, such as the marble and granite present at the West Cemetery.

The theory behind the Rilem tube is that the wetting rate and pattern of wetting for different materials are directly related to the materials' capillary structure and pore size distribution.

The test apparatus is a pipe-like device affixed to the masonry surface using a piece of non-staining putty. The open, bottom end of the pipe has an area of 4.9 cm^2. The vertical tube is graduated from 0 to 5 ml with each gradation representing an increment of 0.5 ml. The total height of the column of water applied to the surface, measured from the center point of the flat, circular brim to the topmost gradation, is 12 cm. This corresponds to a pressure of 1177.2 pascals (approximately 0.17 psi), or a dynamic wind pressure of 157.8 kilometers per hour (approximately 98.1 mph). This is essentially a Category 2 hurricane.

Figure 10. Placing clay around the open, bottom end of two Rilem tubes prior to use.

Water is added through the upper, open end of the pipe until the column reaches the "0" gradation mark. The quantity of water absorbed by the material during a specified period of time is read directly from the graduated tube. The periods of time appropriate for the test depend on the porosity of the material on which the measurement is being made; the samples from Togus were measured after 5, 10, 15, 20, and 30 minutes.

Typically a graph is created to allow comparison between different test panels. Test results are limited since only a small area is tested at any one time. Nevertheless, it is typically thought that acceptable performance is achieved if the level of water drops no more than 20% of the original height (i.e., 1 ml) during the 20-minute test period.

Another test that was used involved direct testing of stone fragments for soluble salts. This test relied on EM Quant® test strips (EMD Chemicals) and the test is considered semi-quantitative. Samples were tested for the presence of nitrates, nitrites, chlorides, and sulfates since these are the most common soluble salts that affect structures and monuments. These salts may derive from atmospheric pollutants, fertilizers, or may be naturally occurring.

In each case the stone sample was thoroughly ground in a mortar and was allowed to soak in distilled water for 48 hours. The water was then tested using the standard protocol for each test strip.

A final testing program was conducted on a sample of marble obtained from the granite socket of a discarded early stone. This marble was submitted to Ceramic Tile and Stone Consultants, Inc. in Jamul, California for a more detailed laboratory evaluation. Goals of the study included examination of the constituents to determine if the marble could be sourced, as well as to evaluate weatherability characteristics. Both a macroscopic and microscopic evaluation was conducted. The work incorporated thin section petrographic analysis, elemental analysis using x-ray fluorescence (XRF), X-ray diffraction mineralogical analysis (XRD), and interpretative analysis.

In addition to the stone tests, three soil samples were collected and sent to the University of Maine Analytical Laboratory and Soil Testing Service in Orono. The tests were primarily focused

on traditional agricultural concerns such as soil pH, the presence of macro and micro nutrients, and soil particle size analysis (soil texture). In addition, we obtained information on microbial biomass, as well as soluble salts present in the soils.

While most of these tests focus on agricultural concerns, even these are of importance to the long-term preservation of the stones since they guide future soil amendment practices. Some data, however, can provide critical help to understand the condition of the Togus stones. For example, soil pH may directly affect the longevity of stone and the presence of soluble salts can contribute to spalling and other deterioration concerns.

The lab protocols are fairly standard for soil studies. The pH is obtained in water and Mehlick buffer (SM 4500-H); the presence of available nutrients is obtained by modified Morgan extract; organic matter is determined by loss on ignition; phosphorus (P) is determined colorimetrically; and other measurements are obtained by ICP (inductively coupled plasma) using the EPA 200.7 method.

Historic Synopsis

The NHDVS has received considerable historical attention over the past several decades, perhaps beginning with the doctorial dissertation of Judith G. Cetina (1977). Research by authors such as Theda Skocpol (1993) and Patrick Kelly (1997) have helped place the NHDVS in a broader context of social welfare programs. Popular accounts such as Elizabeth Corbett (2008), Timothy Smith (1998), and Donald Beattie (2010) have focused on individual Homes. Work by Suzanne Julin (2007) and Justin Edgington and his colleagues (2011) have provided detailed evaluations of multiple properties. With that said, this report will provide only broad overviews of the NHDVS development and system, as well as the events at Togus. We have chosen to adopt the same periods or phases as proposed by Julin (2007). Our focus will be on the limited resources associated with the development and operation of the West Cemetery.

The National Home for Disabled Volunteer Soldiers

Early Steps

Benefits to those who served in the military were modest prior to the Civil War. For example, although pensions were extended more broadly to Revolutionary War veterans in 1818 (with the number of pensioners jumping from about 2,000 to over 17,000), they remained available to only those in the most dire poverty (Skocpol 1993:92; Julin 2007:7). As annual costs escalated the application process was tightened and some pensions were actually withdrawn. The provisions were not further liberalized until 1833 when the Bureau of Pensions was established. In addition, beyond the pension system the only other support offered by the government to veterans was the United States Soldiers' Home.

In 1851 Congress created the United States Military Asylum, under the control of the War Department with admittance limited to soldiers of the Regular Army. This was originally designed as three branches, but was in the words of Kelly, "something of an institutional flop" (Kelly 1997:12). In the late 1850s Congress consolidated activities into the one establishment in Washington, DC and in 1859 changed the name to the Soldiers' Home (Kelly 1997:13). Congress also created the Government Hospital for the Insane in 1852 (see Trinkley and Hacker 2007 for a brief review).

The Civil War created a new political climate – and a massive new pension system. In July 1862 a Republican-dominated Congress "enthusiastically" enacted a new pension law (the "General Pension Law") (Skocpol 1993:92, Kelly 1997:18). This new pension was tied to their disabilities "incurred as a direct consequence of . . . military duty" or, after the end of the war, "from causes which can be directly traced to injuries received or disease contracted while in military service." Pensions were graded according to rank and by 1864 Congress began tinkering with the law, also grading disabilities, even allowing "disability equivalent to the loss of a hand or a foot" to be determined by a physician (Skocpol 1993:93).

While the extent of injuries and disabilities resulting from the Civil War are hard to imagine (300,000 suffered gunshot wounds, 30,000 suffered amputation or loss of the use of an injured limb), so too were the financial resources devoted by the Federal government to Civil War veterans. Prior to the 1862 pension law, the United States was paying benefits in the amount of about $1 million to 10,700 veterans and widows. By 1866, however, the number of pensioners swelled to nearly 127,000 and the

Figure 11. An 1888 Puck carton revealing the public antipathy toward the veterans' pension system.

total disbursements mounted to about $15.5 million annually (Skocpol 1993:94). Kelly notes that federal benefits to Union veterans or family members were the "single largest expenditure in the federal budget, excluding service on the debt, every year between 1885 and 1897" (Kelly 1997:5).

The system was further bloated by the 1879 Arrears Act (easily approved by a Democrat-controlled Congress) that allowed soldiers with newly encountered Civil War disabilities to sign up for a pension and receive in one lump sum all of the pension payments they would have otherwise received since the 1860s. In 1890 the Dependent Pension Act severed the link between pensions and service-related injuries, thereby allowing any veteran with 90 days service and an honorable discharge to apply for a pension. By 1906 no war-related injury was necessary for a pension – old age alone was a sufficient disability (Skocpol 1993:96).

Pension payments evolved into a social security system or "old age" benefits that by 1910 were being used by over 90% of the surviving Union veterans (Skocpol 1993:95). They became what has been called "party-run patronage democracy" transforming the U.S. government into a major welfare provider. It is within this context that we must consider the development of the NHDVS.

Regardless, at the onset of the Civil War the federal government had no real idea of the long-term effects the war would have – on either people or the treasury. In fact, there was no federal agency charged with such concerns and this perhaps gave rise to the United States Sanitary Commission (USSC), chartered by President Lincoln in June 1861. Although their power was originally limited to the investigation of the medical conditions and needs of federal troops, this scope was rapidly expanded.

One activity of the USSC was looking beyond the Civil War and attempting to develop a plan for returning veterans – many of whom would undoubtedly be severely injured. The USSC, throughout its history, waivered on what would need to be done. Early they sought to "promote the healthy absorption of the invalid class into the homes, and into the ordinary industry of the country" (quoted in Kelly 1997:24). The organization also operated a series of "homes," usually at transit points, that provided food and shelter to sick, wounded, or exhausted soldiers as

Figure 12. Seal of the United States Sanitary Commission showing winged Mercy with the symbol of Christianity on her bosom and holding a cup of consolation. She is shown descending from the clouds to visit sick and wounded soldiers. Surrounding the seal is the name and date of incorporation.

they returned home. Later they simply sought to duck the issue entirely focusing, instead, on the easily identifiable needs of soldiers on active duty. This left the issue up to a variety of Northern women's groups who opened small homes for local disabled, such as the Cooper Shod Soldiers' Home in Philadelphia, the Chicago Soldiers' Home and the Cleveland Soldiers' Home (Kelly 1997:34-35).

A member of the USSC and a Congregational minister, Frederick N. Knapp, prepared a broadside, *Sanitaria, or Home for Discharged, Disabled Soldiers*. In it he estimated that 17% of those leaving the service would be totally disabled, 16% would be seriously disabled, but "in a condition which admits of gradual but decided improvement," and 19% would suffer from slight to serious, but not permanent, disabilities. It still followed the USSC line that while some institutional care may be necessary, it still favored home and community – not federal – care.

Eventually the USSC became solidly opposed to any national home (just as they opposed federal programs intended to assist freed slaves). Kelly observes,

> Hostile to the idea of institutional care, skeptical of government's ability to create an adequate soldiers' asylum, afraid that a federal asylum might come to symbolize a powerful central state, and fearing the democratic process, the USSC leadership hoped to keep the subject of soldiers' asylums as far as possible removed from "political rivalries, state rivalries, and civic ambition." This dismissal of the need for federal veterans' institutions represents a decisive point in the evolution of the political thinking of the Northeastern metropolitan gentry, marking as it did an important step in the final rejection of its wartime nationalism in favor of the laissez-faire liberal Republicanism that so marked the Gilded Age public discourse of urban elites (Kelly 1997:74).

Early Development of NHDVS, 1865-1870

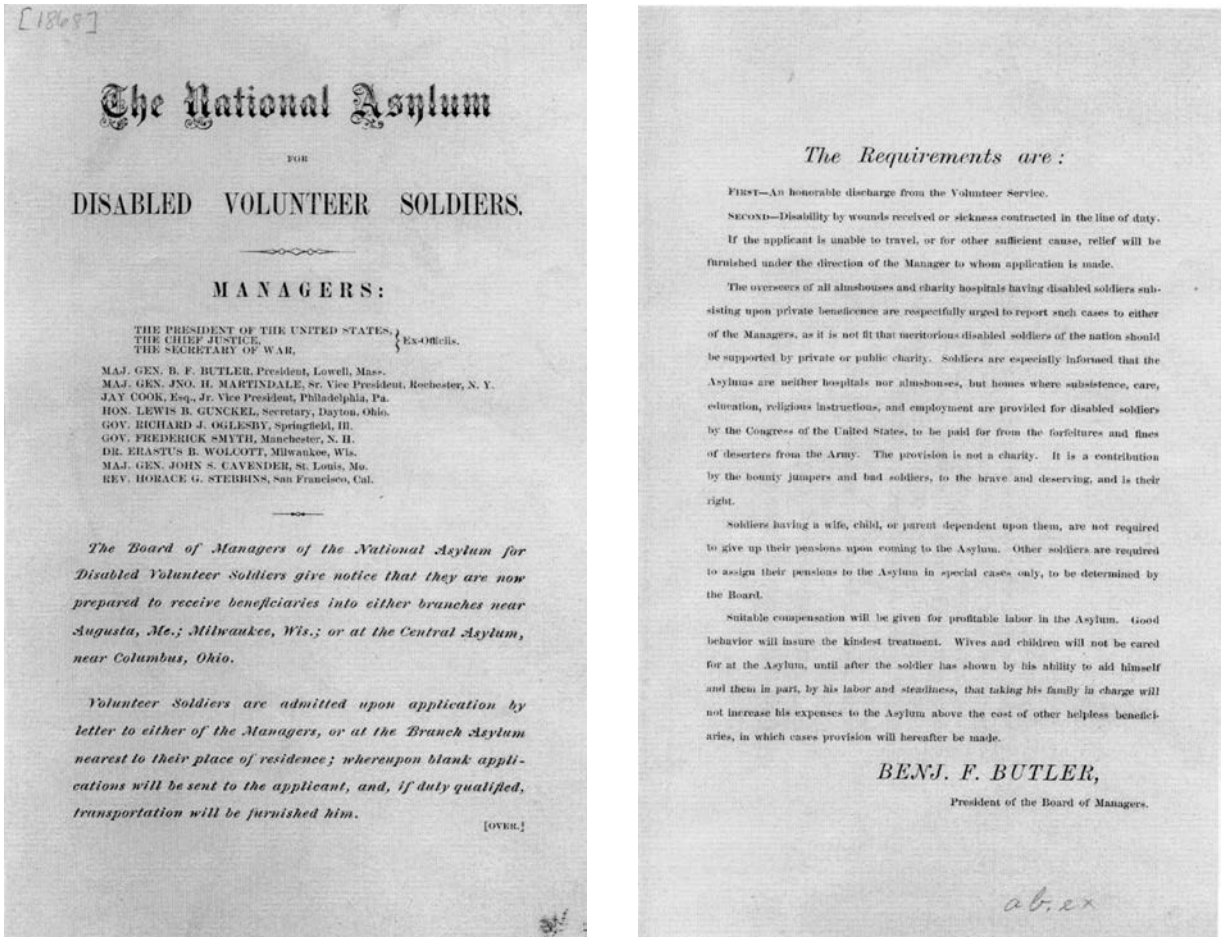
Without their assistance or support others stepped forward. On March 1, 1865, Senator Henry Wilson of Massachusetts, chair of the House Committee on Military Affairs, introduced what he termed, "a little bill to which there can be no objection." His bill was designed to "incorporate a National Military and Naval Asylum for the relief of the totally disabled officers and men of the volunteer forces of the United States." It created no debate and on March 3, 1865 Congress incorporated the National Asylum for Disabled Volunteer Soldiers (Kelly 1997:47). The bill was signed into law by President Lincoln on March 5, 1865 (Anonymous 1885:1-2; Julin

2007:13).

This initial organization, with 100 board members, was unable to ever present a quorum at a meeting and drifted in inaction. In an effort to break the stalemate, Benjamin F. Butler suggested that a committee of the Managers request Congress amend the original act to create a smaller governing board with some hope of creating the Asylum.

Butler is one of the most controversial political generals of the Civil War, but his work with the NHDVS demonstrated his administrative skills. The committee took his suggestion and returned the organization to Congress. Butler appealed directly to Representative Robert Schenck of Ohio, the chair of the House's Military Affairs Committee.

When Congress reconvened in December 1865 Schenck proposed amending the NHDVS charter to create an administrative body similar to that of the Smithsonian. On March 21, 1866 Congress approved legislation superseding the original act without debate. The new board would consist of 12 members, including the President, Chief Justice, and Secretary of War as *ex officio* members and nine members whose appointment was subject to the approval by a joint resolution of Congress. Historically these nine members – who performed the real management of the organization – were a mix of military men, politicians, and wealthy notables, each who served



[1867]

The National Asylum

FOR

DISABLED VOLUNTEER SOLDIERS.

MANAGERS:

THE PRESIDENT OF THE UNITED STATES,
THE CHIEF JUSTICE,
THE SECRETARY OF WAR, } Ex-Officiis.

MAJ. GEN. B. F. BUTLER, President, Lowell, Mass.
MAJ. GEN. JNO. H. MARTINDALE, Sr. Vice President, Rochester, N. Y.
JAY COOK, Esq., Jr. Vice President, Philadelphia, Pa.
HON. LEWIS B. GUNCKEL, Secretary, Dayton, Ohio.
GOV. RICHARD J. OGLESBY, Springfield, Ill.
GOV. FREDERICK SMYTH, Manchester, N. H.
DR. ERASTUS B. WOLCOTT, Milwaukee, Wis.
MAJ. GEN. JOHN S. CAVENDER, St. Louis, Mo.
REV. HORACE G. STEBBINS, San Francisco, Cal.

The Board of Managers of the National Asylum for Disabled Volunteer Soldiers give notice that they are now prepared to receive beneficiaries into either branches near Augusta, Me.; Milwaukee, Wis.; or at the Central Asylum, near Columbus, Ohio.

Volunteer Soldiers are admitted upon application by letter to either of the Managers, or at the Branch Asylum nearest to their place of residence; whereupon blank applications will be sent to the applicant, and, if duly qualified, transportation will be furnished him.

[OVER.]

The Requirements are:

FIRST—An honorable discharge from the Volunteer Service.

SECOND—Disability by wounds received or sickness contracted in the line of duty.

If the applicant is unable to travel, or for other sufficient cause, relief will be furnished under the direction of the Manager to whom application is made.

The overseers of all almshouses and charity hospitals having disabled soldiers subsisting upon private beneficence are respectfully urged to report such cases to either of the Managers, as it is not fit that meritorious disabled soldiers of the nation should be supported by private or public charity. Soldiers are especially informed that the Asylums are neither hospitals nor almshouses, but homes where subsistence, care, education, religious instructions, and employment are provided for disabled soldiers by the Congress of the United States, to be paid for from the forfeitures and fines of deserters from the Army. The provision is not a charity. It is a contribution by the bounty jumpers and bad soldiers, to the brave and deserving, and is their right.

Soldiers having a wife, child, or parent dependent upon them, are not required to give up their pensions upon coming to the Asylum. Other soldiers are required to assign their pensions to the Asylum in special cases only, to be determined by the Board.

Suitable compensation will be given for profitable labor in the Asylum. Good behavior will insure the kindest treatment. Wives and children will not be cared for at the Asylum, until after the soldier has shown by his ability to aid himself and them in part, by his labor and steadiness, that taking his family in charge will not increase his expenses to the Asylum above the cost of other helpless beneficiaries, in which cases provision will hereafter be made.

BENJ. F. BUTLER,

President of the Board of Managers.

abex

Figure 13. Broadside announcing the new National Asylum for Disabled Volunteer Soldiers (Kresge Memorial Library. Convenant College, Lookout Mountain, Georgia).

without pay (Kelly 1997:81).

Funding, however, was to come from fines against officers and soldiers sentenced by courts-martial or military commissions as well as forfeitures resulting from desertion and other unclaimed monies (Julin 2007:13). This system was not only undependable, but all funds required auditing before being released – a process that often required several years. By 1875 the funding was changed to direct annual appropriation.

Once legislation was enacted the Board set out to not only acquire the facilities, but also members (or inmates as they were initially called). In order to publicize the home, circulars were sent out explaining the application process and, especially, emphasizing that these were not "dreary asylums but . . . agreeable establishments created to reward the North's citizen-veterans for their martial contributions to the state" (Kelly 1997:95). Figure 13 is one such circular, but nearly identical content would still be published by newspapers several years later, ensuring that all were aware of the new Homes (*New York Times,* February 23, 1870).

Membership was fairly simple. An individual need only be honorably discharged from volunteer service and have evidence of disability caused by wounds or sickness (and eventually this requirement would be eliminated). A soldier's pension had to be relinquished upon entry, but the Home simply held the pension, providing interest; it was not forfeited.

As circulars went out, so too did efforts to find appropriate facilities. The Board used advertisements in newspapers, soliciting information on the availability of health and recreation resorts that might be available. As might be imagined there were numerous institutions driven to the verge of collapse by the Civil War and owners were eager to sell property to the federal government (Kelly 1997:107).

Among all of the possibilities the Board quickly settled on a location about 5 miles east of Augusta, Maine at Togus. This was the location of the "Togus Mineral Spring," a location already well known in the mid-1850s and "much frequented by invalids and others seeking health, or amusement and relaxation." The sulfur waters were reported to be "very efficacious" and a "spacious house of entertainment" had already been built near the spring (Hayward 1853:390).

In 1858 Horace Beals purchased the 1,100 acre property for $4,000. Beals, who acquired his wealth from selling the government stone, intended Togus to be Maine's answer to Saratoga Springs (North 1871). His tract included not only the healing waters of the famous Togus Mineral Springs, but also a hotel capable of housing 300 guests, a farm house, stables, bowling alleys, various outbuildings, a racetrack, walking paths, a fruit orchard of nearly five acres, and driveways lined with ornamental trees (Butler 1886:688; Edgington et al. 2011:5). Beals invested at least $100,000 into the property and opened it just prior to the Civil War.

The political and emotional climate of the country doomed the resort to failure and Beals died in 1864. The elegant furniture was removed and sent to Boston where it was sold (North 1871). The property passed to his estranged wife, who subsequently remarried William G. Mickell and moved to New York. She had no interest in the property and was happy to dispose of it, eventually selling it to the federal government for $50,000 (Kelly 1997:107; Kennebec County Register of Deeds, DB 253, pg 207, DB 259, pg. 482; Anonymous 1867:10). Apparently as late as 1870 she had not been fully paid for the purchase (Beattie 2010:79). At least three additional tracts of land were acquired by the Board from surrounding land holders to further expand the Togus home (Kennebec County Register of Deeds, DB 259, pg. 319; DB262, pg. 378; DB 262, pg. 560).

Since the property was to be a summer resort, the hotel lacked running water, light, and heat. Consequently, the Board had to immediately invest in indoor plumbing, central heating, and lighting. Another significant drawback was that there was no good transportation system between Togus and nearby Augusta, although Kelly suggests that this may have helped fulfill the Board's desire to keep residents isolated from the

temptations of city life, such as prostitutes, gambling, and alcohol (Kelly 1997:108).

Additional homes were quickly developed in Milwaukee, Wisconsin and Dayton, Ohio. The Togus home would be called the Eastern Branch; the Milwaukee home became the Northwestern Branch; and the Dayton home was known as the Central Branch. Shortly afterward the Southern Branch was opened in Hampton, Virginia. Each location reflected a combination of climatic, spatial, and political interests (Julin 2007:14).

Shortly after the initial opening a December 8, 1867 *New York Times* article reported that while the work had just begun, "yet within three months, [the Homes have] supported or relieved more than fifteen hundred disabled soldiers."

Staff at each home was to consist of a governor, deputy governor, secretary, surgeon, chaplain, and steward (Anonymous 1867:18), although in reality Togus often had fewer, especially during the early period. Some staff, such as the Chaplain, were obtained from the local community to visit the Home periodically.

All of the Homes operated similarly, containing barracks, a dining hall, a hospital, recreation facilities, and a cemetery. Often there were also work opportunities, including shoe shops, printing departments, soap manufactories, and other endeavors. The Homes were regulated with a military structure and men wore old military uniforms. When these eventually ran out, new uniforms were made. The residents were organized into companies of 150 men, commanded by a Captain. There was an "Officer of the Day," responsible for daily inspections. Their lives were regulated by bugle calls (reveille at 5am, breakfast at 5:45am, dinner at 12 noon, supper at 5:30pm, and taps at 9:30pm) and the Articles of War.

It was thought that this structured environment helped the men know what to expect. It was perhaps more likely an effort to prevent the Home from becoming a haven of "knaves" who "will seek to live on charity, and . . . point to their wounds as giving them the right to support" (quoted in Logue 1992:414). One explanation was that the military organization would "discourage listlessness and monotony" and teach residents "to use for self-support what muscle they have left" (Logue 1992:414).

However, one member remarked about life in the Home,

> It is unvarying and unceasing in its monotony. One day is like another, one month or one year the same unfailing round. To recall the day of the week is to recall the same meals, and we have pleasurable anticipation, if unwell, of any little delicacy to tempt a capricious appetite. Of course we do not expect it, but memory recalls other days so different, here there is no outlook ahead, but the hospital first, the cemetery next. We cannot help thinking of this, the almost daily funeral detail, the plaintive dirge, the slow-moving column, reminding us of the end so rapidly approaching (Spalding 1886:9-10).

Men were issued passes for brief trips off the Home during set hours and they could obtain furloughs if they desired to be absent for longer periods. Some took furloughs for legitimate reasons, such as to visit families or attempt to live upon their own. Others, however, used the furloughs as opportunities for debauchery, taking their built-up pensions and spending the money on women and alcohol, then returning to the branch again in both poor health and penniless. In December 1869 the Kennebec *Journal* reported, "During the summer and fall, complaints were occasionally made of the unruly appearance in our streets of intoxicated soldiers from the Military Asylum" (quoted in Kelly 1997:176).

The residents were also allowed to discharge themselves, although many often returned when they were again without funds and

hope. Some also traveled between Homes, seeking better climates, better opportunities, or simply a new location (Julin 2007:18).

Logue (1992) recounts the complaint of some Togus residents that they should have control of their pensions, rather than relinquishing control to the Managers and their threat to leave the Home. The Board refused to change their policy, reminding the residents that "the soldiers who are supported by the government should not threaten the management appointed by the government to administer its bounty" (quoted in Logue1992:41). While a small number withdrew, it appears that many of them wound up in jail or poorhouses, as Logue notes, "completing the lesson of the incident."

Much was made by Benjamin Butler about the racial equality of the Homes (seven veterans of the U.S. Colored Troops were among the first of the early members admitted to the Central Branch) (Julin 2007:17, Kelly 1997:98). His claims, however, seem hollow considering that many ex-soldiers opposed granting suffrage to African Americans and resented the efforts of the Freedmen's Bureau (Kelly 1997:78). The Southern Branch was anticipated to be more appealing to African Americans, but none of the Homes ever attracted many blacks (while 10% of the Union army was composed of African Americans, they never represented more than 2.5% of the NHDVS population). Moreover, the blacks that did come to a Home apparently lived in segregated barracks, ate their meals at segregated tables, and even had their hair cut by separate barbers (Kelly 1997:98; Roisman 2005:114-115).

We have found only two references to African American soldiers at Togus. In 1874 there was apparently only one black in the Eastern Branch (Anonymous 1875:31). It is not clear how this one individual was housed or treated. By 1914 the number had increased to 10 African Americans (Beattie 2010:429)

The first resident of the Eastern Branch was James P. Nickerson, a soldier of the 19th Massachusetts Volunteers. His disability was listed as "chronic rheumatism." He was admitted on October 6, 1866, but discharged at his own request just over a month later on November 13, 1866 because of "his objection to working." Nickerson was readmitted two years later on November 13, 1868 only to once again leave in June 1870.

Three additional members were admitted in November 1866, with all three leaving for various reasons and subsequently being readmitted. John Simpson, who was admitted on December 7, 1866, was discharged for insubordination and bad conduct on January 24, 1867, only to be readmitted for a few days in July 1869 before he deserted. By May 1900 Simpson was again readmitted, dying of septicemia in 1902 and being buried in the Home Cemetery. He was, however, disinterred and shipped to Nantucket in 1910.

The Eastern Branch staff was hardly more stable. Major General Edward W. Hinks was the first governor of the Home, but he left in only 8 months, being replaced by Brigadier General Charles Everett. Everett, who had been the deputy governor, resigned as governor after only 10 weeks. The Board failed to appoint a replacement and the role was assumed by Major Nathan Cutter, who was also the Home's Secretary, Treasurer, and Steward (Veterans Administration 1977:8-12).

In spite of these less than spectacular early members, Togus had climbed to a population of nearly 270 by late 1867, so it was particularly disastrous that in early January 1868 (differing accounts place the fire on January 5th, 7th, or 8th) the hotel building, only recently remodeled, caught fire and burned to the ground. North (1870:773) claimed that the cause was "defective arrangement of the heating apparatus" and the fire occurred just after the call for lights out at about 9:30pm. North describes the suffering caused by the "cold and piercing wind" and having to lay invalid soldiers "on mattresses . . . upon the snow." While unmentioned by the Board, North claims there were "disgusting scenes of disorder and violence" promulgated by the distribution of a key of whiskey taken from the hospital and that local townspeople had to be brought in to restore

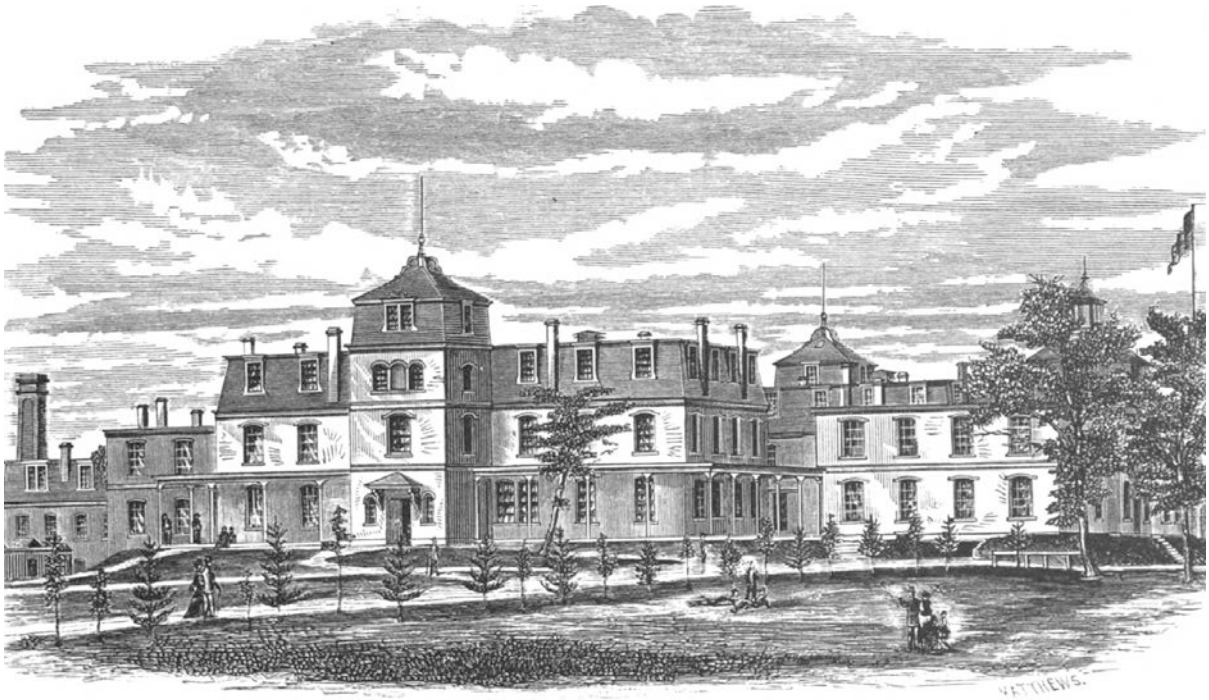


Figure 14. Engraving of the NHDVS buildings in 1870 from a southwest view (North 1871:between 772 and 773).

order (North 1870:778; cf., Anonymous 1869:1).

After some hesitation the Board decided to rebuild using the design of Benjamin F. Dwight, a Boston architect (North 1871:774). Construction began July 1, 1868 under the general contractor, Natt Head of New Hampshire. By the end of the year three brick buildings, each 100 by 50 feet and three stories high, were finished. A fourth structure of similar size that had been injured by the fire was rebuilt and also ready for use. These buildings were,

> heated by steam, furnished with the most serviceable cooking and laundry apparatus, with boilers and engine-house and coal-house, at an expense not exceeding $65,000 (Anonymous 1869:2)

These new structures, all with mansard roofs and slate shingles, provided accommodations for 600 and joined other pre-existing buildings, including a hospital, chapel, quarters for officers, as well as storage (Anonymous 1868:2, 1870:2).

Describing the facility in 1868, James North observed,

> A store is connected with the establishment which supplies the inmates with many articles which they desire, the profits of which go to the amusement fund. A brick building two stories high, with mansard roof, is erected and being completed for amusement purposes. In the first story are two bowling alleys and billiard saloon; in the second story is a hall reaching up into the roof, with a large stage, and galleries on three sides. This is for dramatic exhibitions, lectures and public entertainments. A large brick building is being erected to contain a ten horse-power engine to be used in the first story for a machine shop;

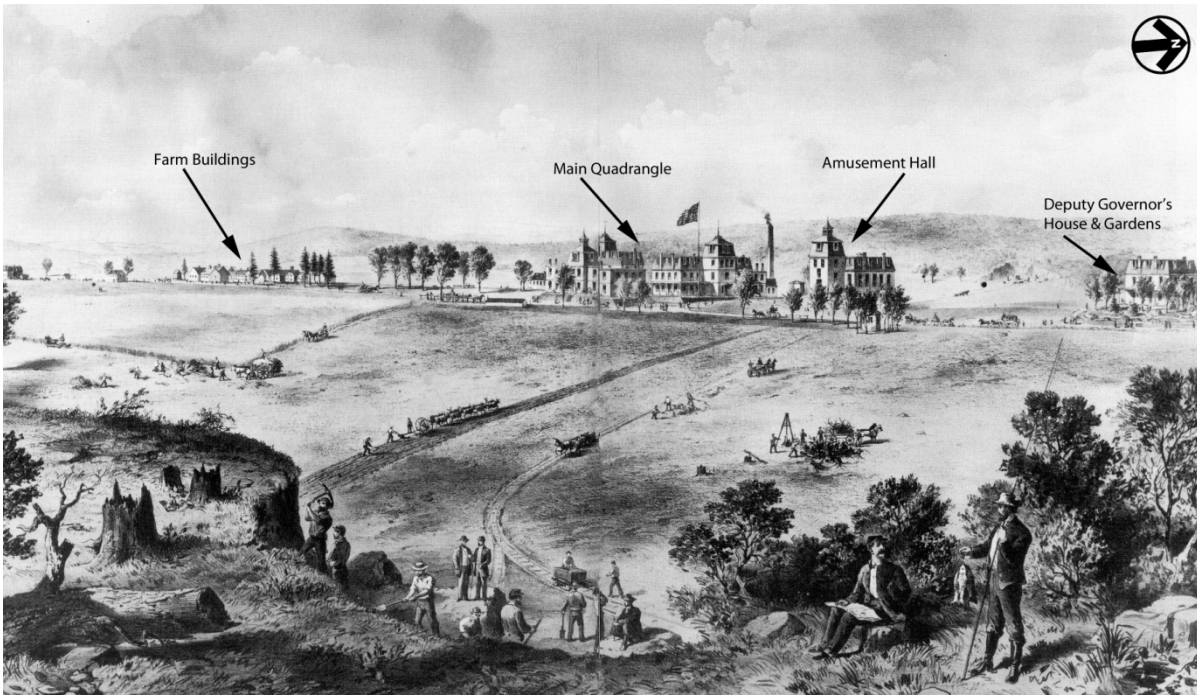


Figure 15. The Home in 1872 from a lithograph drawn by John B. Bachelder (adapted from Smith 1998:10-11).

> in the second story is to be a shoe manufactory and tailor's shop. A new brick residence a few rods from the main building is being finished for the use of the commandant. A large reservoir, to cover the area of one acre, at a convenient distance from the buildings, is being constructed, at great expense, to furnish an unfailing supply of pure water, which is to be taken from Greely pond (North 1871:1874-1875)

Discussing the farming operations at Togus, he commented that 85 head of cattle were present, including some "choice Devon stock."

Growth of the NHDVS, 1871-1883

During this period the Eastern, Central, and Northwestern branches constituted the NHDVS and Julin notes that the Board's actions during this period "formed the basis of an institution that would continue to grow, change, and adapt, well into the twentieth century" (Julin 2007:19).

An 1872 lithograph (Figure 15) provides the earliest view of the physical layout of the Eastern Branch. Viewed from the east, at the center of the image are the newly erected main quadrangle (compare to Figure 14) and the adjacent Amusement Hall. At the far right (north) is the Deputy Governor's House and its associated gardens. The shop building described by North is not visible, although various agricultural buildings can be seen in the distant south, including the large brick barn built for the institution's cattle at the far left. Smith (1998:13-19) provides the most accessible reproductions of photos showing these structures.

A similar view from 1878 (Figure 16) shows that the Home had grown dramatically in only six years. A new hospital, under construction in 1875, was completed in 1876, as was a bakery and the Surgeon's House (Edgington et al. 2011:6).

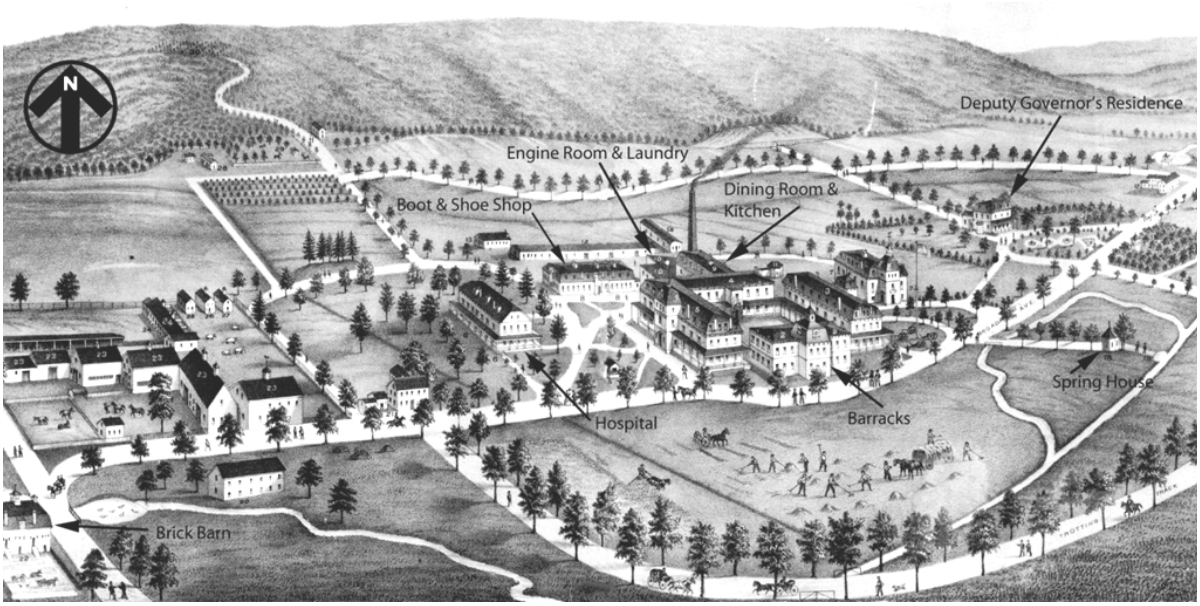


Figure 16. National Soldier's Home Togus, Near Augusta Maine by Rugar in 1878. This view is looking north (adapted from Smith 1998:20-21).

This view also shows the spring and spring house that made Togus famous. Neither is ever shown again on any of the different views. Nevertheless, as late as the turn of the century one commentator remarked that some members still used the spring (Whipple and Levy 1905:185). At some point, however, "ditches were made to form a drainage system for the property and the vein feeding the spring was cut" (Anonymous n.d.:2). Post (1973:6) suggests that the spring may have ceased flowing because of the new hospital construction. This seems unlikely given the differences in locations.

In 1871 the Board authorized the Governor at Togus to "commence the business of making shoes," thinking that the activity would provide "in-door employment . . . especially during the winter months, when it was almost impossible to be out of doors" (Anonymous 1872:2). Very early on the Board found that the activity was not a financial success, but still claim the usefulness of the activity as a "moral and remedial agent."

In an effort to control losses from the shoe shop the Board in 1873 required all members working there to not only sign a contract, but also to purchase their own tools. In addition, each employee would have wastage deducted from his salary (Anonymous 1874:19).

By 1874, 113,256 pairs of shoes had been made, having a value of $110,364. Nevertheless, "owing to the depression of the shoe-trade," the venture still resulted in a loss to the Home (Anonymous 1875:13). After considerable loss, the Board managed to lease the operation to Alfred Fellows "at his own risk and expense" (Anonymous 1875:72, 80). By 1876 Fellows had died insolvent, leaving the Home with a nearly $15,500 debt guarantee that had to be absorbed (Anonymous 1877:121, 129). While that suspended shoe making, it did not squelch the Board's enthusiasm and by 1878 the Eastern Branch again had 55 men working in a shoe shop. Moreover, that year the Branch even made a profit of nearly $4,300 (Anonymous 1879:54). Eventually the shoes were used within the various Branches, with the shop closing in 1883.

A chair shop had also been established, producing in 1874 260 chairs. These, and other activities such as the wheelwright, blacksmith, carpenter, harness maker, and soap-maker, employed 397 of the approximately 570 residents (Anonymous 1875:33). Julin (2007:19) notes that

this reliance on members for various labor worked well until the population grew older. By the turn of the century the Board found it necessary to increasingly hire civilians to do work that had been done by members.

Fire continued to be a threat and in March 1871 the original amusement hall was lost to fire, although it was quickly rebuilt, at a cost of less than $8,000 using the "disabled soldiers at this branch in a most economical manner" (Anonymous 1872:3). The Board also directed all Homes, "as a further precaution against fire" to have "twelve wooded buckets . . . constantly filled with water on each floor of the principal buildings" (Anonymous 1872:16).

Congress made four significant legislative changes during this period. An act approved February 28, 1871 extended the benefits of the various Homes to disabled volunteer soldiers of the War of 1812 and the Mexican War. Two years later, on June 23, 1873, Congress changed the original name from "National Asylum" to "National Home." In 1882 Congress required that pensions of soldiers without wife or children to support be used for their support when transferred to the Government Asylum for the Insane. An Act of February 2, 1881 stipulated that pensions of members could not be used to pay their fines. After that time the records begin reflecting that members were required to work off fines since this was the only means the Home had of collecting legitimate debts. Perhaps the most significant change, however, was the Act of March 3, 1875 that established the NHDVS would be funded through annual appropriations since this placed the institution on a far firmer financial footing (Anonymous 1885:4). Prior to this action, however, there had been various congressional acts to supply funding deficiencies.

We learn in the 1878 report that the Governor of the Eastern Branch had appealed to the Internal Revenue Service to help control the ease with which alcohol could be obtained around Togus,

> There is less liquor in the near vicinity of the Home than there was before the United States internal revenue agent prosecuted parties for selling without a license, which, of course, they do not give at my request. In the towns on the Kennebec the men can get all they can pay for (Anonymous 1878:59).

In an effort to reduce drunkenness – or at least have some control over it – the Home had also begun selling "light beer" in their store. This seemed to be a success, with the Governor noting that "the commitments to the guard-house and the amount of fines exacted having decreased one-third (Anonymous 1878:59). Another writer observed that "drunkenness has decreased; there are fewer men arrested by civil authorities; there is a smaller number in the hospital as a result of protracted debauches on bad liquor; more money has been sent by the inmates to their families; and the order and discipline in the Home are much better" (Stevens 1900:297). In 1906 Congress passed an appropriation bill stating that funding would be eliminated for any Home that sold beer, wine, or intoxicating liquor after March 4, 1907. Thus, while the Board protested the change, the sale of alcohol ended, although clearly drinking – often to excess – did not (Julian 2007:28).

As Congress expanded eligibility for entering the NHDVS, the population swelled. In 1883 the Governor of Togus noted that he expected the number of applicants to increase, "overtaxing the accommodations that can be provided." Further he observed that furloughs were also decreasing since as the members grew older they evidently preferred "to remain quiet and [were] less inclined to seek change" (Anonymous 1884:119).

By 1883 Togus had 1,404 members and 16 civilian employees. Three hundred five members were employed in some capacity at the Home. Nearly 67% of the members (1269) were from three states: Maine, Massachusetts, and New York. Prior to entering Togus, most of the members (47%) were laborers, followed by farmers (21%), although in 1883 there was also

one attorney, one physician, and two dentists. Most of the members (58%) were foreign born, with most of those (60%) from Ireland. Only nine of the members were veterans of wars other than the Civil War and all but 19 were volunteers (11 were regular army and eight had served in the navy). The greatest proportion of the members (43%) was between 40 and 50 years of age, although over a third were between 30 and 40. Only 2% of the members were 80 years or older. A relatively small proportion of the members had lost limbs; most disabilities were a result of wounds, followed by sickness (Anonymous 1884:120-125).

Expansion of the NHDVS, 1884-1900

Julin (2007:21) notes that between 1884 and 1900 membership increased dramatically, at least partially as a result of the depression that swept across America in the 1870s and early 1880s. In addition, in 1884 membership was opened to any honorably discharged veteran if he could not care for himself – and age was specifically considered a disability.

All of the branches cared for 6,738 men in 1883. That number increased to 10,681 in 1888 and 18,556 in 1898. At Togus the increase was less dramatic, but still increased from 1,404 in 1883 to 1,974 in 1888, and 2,137 in 1898. To accommodate the increase the Board created four new branches.

Another image of the Home appeared in 1885 (Figure 17). The main quadrangle is again in the center foreground except now we can see a formalized landscape in the courtyard. In addition, a flagpole is found at the entrance to the circular drive, flanked by four cannons. The physical plant has been expanded, accounting for two smokestacks as opposed to the one in 1878. New buildings include the Guard House, Tailor Shop, and Carpenter Shop. Additions are present on the kitchen, boiler house, and laundry. The deer park is shown on this view for the first time. Edgington and his colleagues suggest that the arrangement of structures, while scattered and haphazard, reflected "the pastoral aesthetic popular in landscape design of the day" (Edgington et al. 2011:6). Alternatively the arrangement may be viewed simply as organic and reflecting a lack of any serious planning.

The last bird's eye view of the Home was

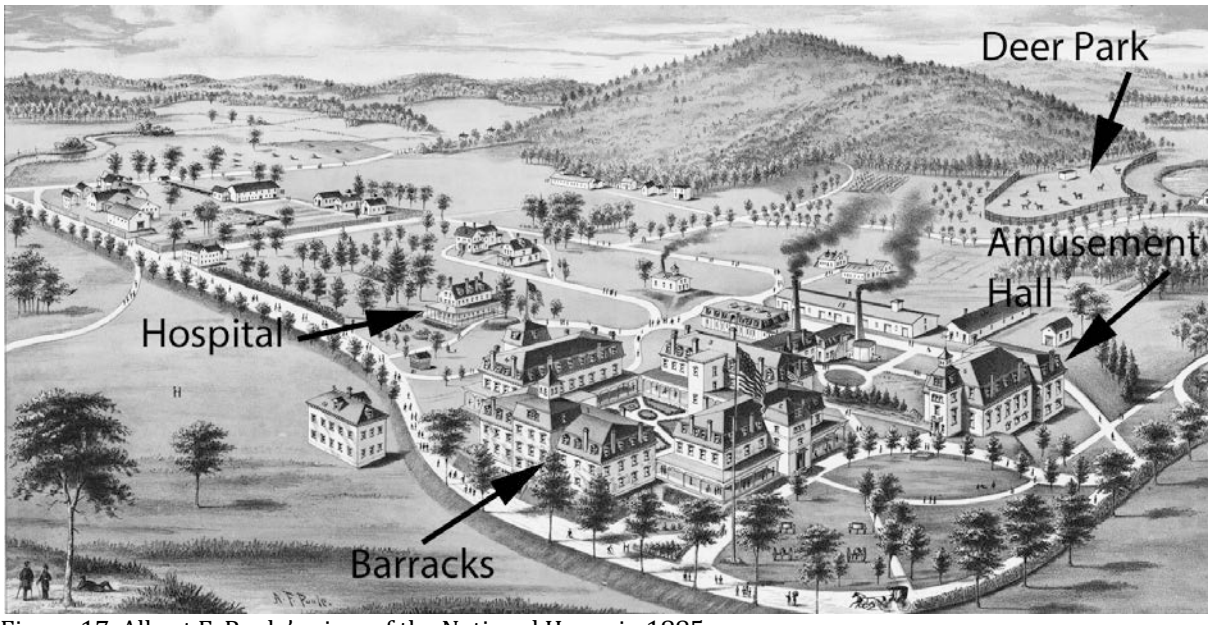


Figure 17. Albert F. Poole's view of the National Home in 1885.

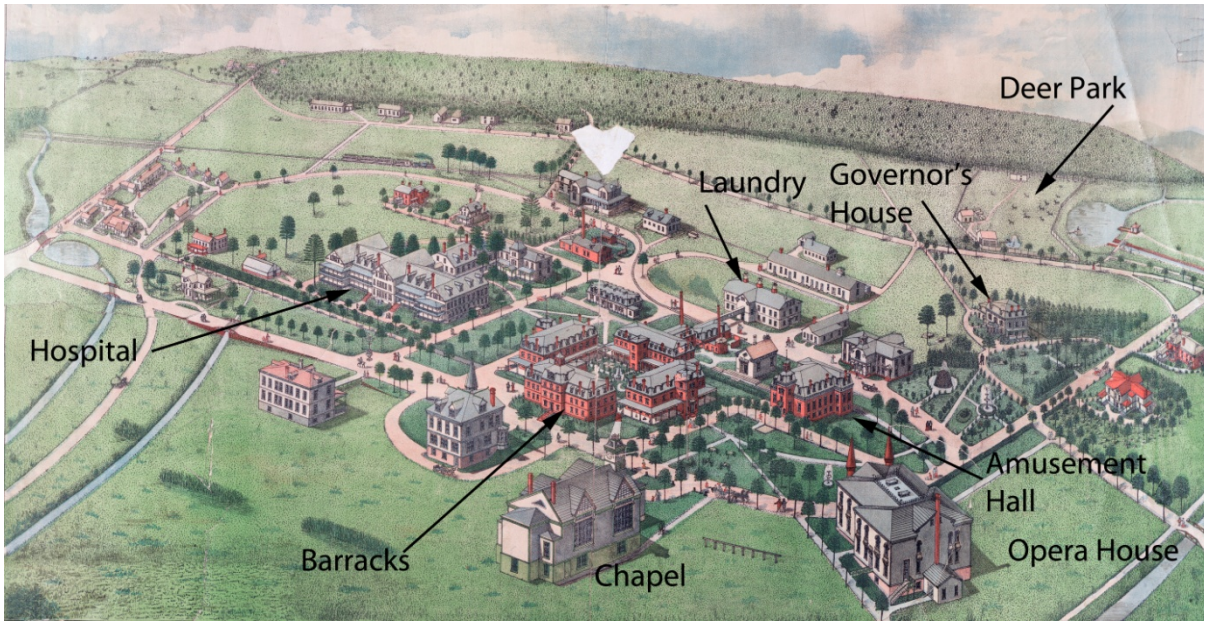


Figure 18. The 1891 view of the Home by William H. Prince.

prepared in 1891 (Figure 18). Railroad access was provided in 1890 and can be seen in the left and central background, arriving at a new train station. This rail connection continued to be the primary means for the Home to receive goods, especially coal, until 1929 by which time the road system had improved sufficiently to begin trucking in supplies (Beattie 2010:287). While some roads have changed there are several new buildings, including the headquarters building, chapel, saloon, and opera house. The hospital has been extensively enlarged. The laundry appears to have been enlarged and there is a new residence for the surgeon. Changes have also been made in the road network and several fountains and a rockery have been added. The farm was modified by the addition of a greenhouse, revealing the increasing importance of horticultural activities on the campus. Many of the new buildings were designed by Edwin E. Lewis, a Gardiner, Maine architect who practiced throughout the central portion of the state (Edgington et al. 2011:7).

The Deer Park seen in the 1885 and 1891 views was created in 1885 with the comment that it was "proposed to collect specimens of the various animals that inhabit the forests of Maine" (Anonymous 1886:82). Spalding noted that something similar existed prior to this time, but it was difficult to access and rarely visited. The "new" facility included a "rustic lodge and park of several acres" (Spalding 1886:14). By the turn of the century it was called a zoo and was apparently "sold" in 1923 (Anonymous n.d.; Post 1973:6).

This was also a period of maturation. The NHDVS had operated sufficiently long for many preconceived notions to be re-evaluated and for reality to set in. The Board began to realize that,

> To deal with cripples, rheumatics, epileptics, dyspeptics, men who have been victims to excessive drink, depressed by a sense of advancing age and penury, men of all degrees of mental and moral development, who have no future to look to beyond the grave-yard in sight of the Home, and to make them comfortable and orderly in the same Home requires peculiar executive and administrative capacity, large and generous humanity, combined with patience and

Figure 19. Example of out-door relief. Daniel A. Mullett lived outside the limits of the Eastern Branch but collected rations. When he died in February 1909 he was buried in the Western Cemetery (A-12-2526), another benefit of members (adapted from Smith1998:40).

> gentleness (Anonymous 1885:12).

Governor Luther Stephenson of the Eastern Branch expressed similar observations in an 1890 toast at a G.A.R. function. But he also provided a very sobering summary,

> "All is not gold that glitters!" Comrades, I say to you, and send a message through you to those you represent, and it is this: Only when the family circle is broken, when the companion of your life has passed to the better country, when your children are scattered and can no longer perform the offices of filial love and duty, when your hands refuse to work, when your feet move feebly and your brain fails to respond to your bidding, when you are poor, sick and weary, only then should you seek the National Home, and not with the expectation of finding a real home, but only a resting place near the end of your journey toward the home beyond (quoted in Kelly 1997:168).

Early in the history of the NHDVS the government offered "outdoor relief." This was the ability of soldiers to live off campus, often with family members, but sometimes alone, and receive rations from the Home (Anonymous 1867:3). The practice was originally promoted; however, by 1884 it was noted that the practice was really only prevalent at Togus and by that time there were only about 40 families "residing off the grounds and drawing rations." The practice was being phased out since it would "bring men there who would not otherwise expect any benefit whatever from the Home; who were really able to take care of themselves, but who, by reason of some slight disability, consider if they can get their rations out of the United States without any payment it is so much gained" (Anonymous 1885:647). Nevertheless, as late as 1896 there were 33 members receiving out-door relief including rations of about $5.40 a month and clothing identical to that provided to those living on the grounds (Anonymous 1897:21).

A number of "modern" improvements mark this period. For example, the Board gave the Eastern Branch the authority to contract for electrical service, "provided the cost . . . shall not greatly exceed the present cost of gas or gasoline" (Anonymous 1888:14). The following year the Eastern Branch had completed testing and was being provided with electricity from the Kennebec Light and Heat Company. This switch did not come without problems, however. The Augusta plant was apparently "not in a proper condition to do the work required" and on at least one night the Branch was entirely in the dark and "in one case for nearly a week" the lights failed to work (Anonymous 1889:105).

In 1890 the Home was being connected to Gardiner, 5 miles distant, by rail. The effort was to "relieve this Home of much difficulty and distress in transportation, and of the irksome feeling of remoteness and isolation that has lent some gloom to life within it" (Averell 1890:183). Accompanying the new line was a station house and lunchroom (the second floor was used by the Home's band).

Waste disposal was always difficult at Togus and this was reflected in the 1893 comment that, "owing to the difficult topography and marshy character of the Home grounds the disposal of the sewage has been a hard problem" (Averell 1893:231). About this time an effort was made to deepen channels and get sewage more efficiently transported from the Home to the Kennebec River.

The water supply of the Home was another major issue during this period. Prior to 1887 water was obtained from Greely Pond. By 1886, however, water became so scarce that the Home was "compelled to omit bathing entirely, the water supply being only sufficient for steam, laundry, and cooking purposes" (Anonymous 1886b:33). Thus, in 1887 the Home entered into an agreement with the Augusta Water Company to furnish the home with water "from the Kennebec River, above the dam" (Anonymous 1888:59). While this achieved the initial goal of providing a more stable water supply, it also produced a large number of typhoid fever cases – 25 between 1887 and 1891 (there had been none prior to using the Kennebec water). As a result, in 1892 the Kennebec River water was abandoned and the Home instead began using water from the Hallowell Spring. With this change typhoid was eliminated (Whipple and Levy 1905:185).

Another effort to integrate more modern hygiene practices was the 1893 construction of a structure "some distance from the Home and fitted up for use when there is danger from contagious diseases" (Anonymous 1894:91). The need for a "pest house" was perhaps occasioned by the introduction of smallpox into the facility "brought by a member returning from a furlough" (Anonymous 1894:90).

In 1894 the Home also took steps to ensure the preservation of its "old records and documents relating to the management of the Home in years past" by "fitting up" the basement of the post office building (Anonymous 1894:91). This was ironic since today virtually none of these original records survive.

Throughout the nineteenth century the Branch had an active farm and the Home became well known for the raising of Holstein cattle, swine, and Cotswold sheep. By 1887, 148 members served as farmhands. Products included beans, beets, carrots, cabbage, corn, and turnips, although the focus was on pasturage for the cattle. The farm also included a large dairy herd that supplied the Home with milk (Anonymous 1888:104, 106).

In spite of numerous new constructions and all of the other improvements, by the end of this period an inspection observed,

> the Home is overcrowded; every available bed in the dormitories was filled, and cellars and closets were used for sleeping purposes. The hospital, too, needs enlargement; it had but two vacant beds. The barracks are in need of repairs (Anonymous 1899:10).

While additional barracks were approved for construction, the inspection of 1899 found that "the men now sleeping over the beer hall, library, and paint shop will be almost enough to fill them, so it seems additional accommodations are much needed" (Anonymous 1900b:6).

New Challenges for the NHDVS, 1900-1917

Perhaps the most significant challenge faced by the NHDVS was the influx of soldiers from U.S. military involvement in Cuba and the Philippines. While NHDVS officials sought to limit new members to service-disabled Spanish-American war veterans, the official policy still permitted entrance to any veteran unable to

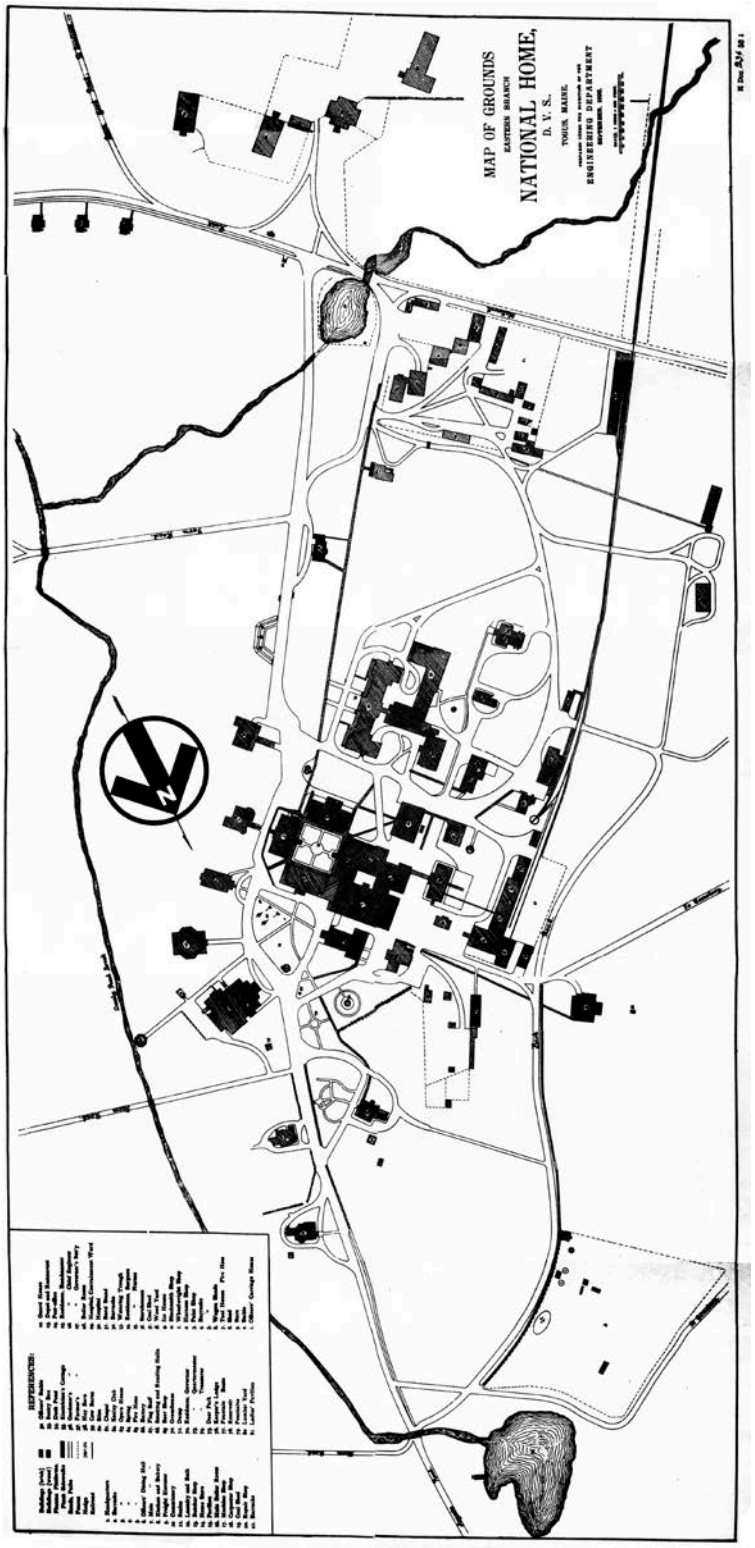


Figure 20. "Map of Grounds Eastern Branch National Home," 1898 (this represents the best copy possible from Anonymous 1900). The West Cemetery is not shown on this plan, but would be located in the lower right on Hollowell Road.

earn a living because of disease, age, or any other disability (Julin 2007:30-31). Julin also notes that not only were more veterans eligible, but the veterans of Cuba and Philippines brought back new diseases, such as tuberculosis, yellow fever, and even leprosy.

The Mountain Branch in Johnson City, Tennessee was opened in 1901. The Board directed that members from the Eastern Branch (as well as the Southern and Central Branches) suffering from tuberculosis were to be transferred to this new facility.

Congress, in 1908, opened the NHDVS to regular service members that were unable to enter the Washington, D.C. Soldiers' Home because they were unable to prove a causal link between their military service and disability. In spite of this – and other – Congressional changes, membership in the Homes continued to decline as elderly Civil War veterans died (Julin 2007:33).

Relying on a 1912 plan, Edgington and his colleagues note significant infrastructure developments, as well as a number of new structures (Edgington et al. 2011:7). Many of these changes, however, took place prior to 1900. We have not identified the 1912 plan, although in the Engineering Office there is mounted on the wall an exceptional plan of the facility from September 1898 and updated to January 1, 1922. A version of this plan is shown here as Figure 20.

While some new construction took place, for example a summer barrack where members could be temporarily housed as the old barracks were being cleaned, this was generally a period of reduced construction. More prevalent were funding requests to repair buildings or replace worn items. For example, in 1907 it was explained that many buildings required "extensive repairs" to their foundations and new boilers were required to replace those "condemned" by the boiler inspectors. By 1907 there were also plans for the development of a new sewage disposal system that included a treatment plant (Anonymous 1907:666, 668-669).

By 1913 the Home had 71 structures with known construction dates; 30 of those structures (42%) dated from the decade of the 1890s. While an additional 22 date from the 1900s, many of these are rather inconsequential structures such as a replacement greenhouse, a coal shed, entrance gates, the sewer, a stable, and a horse shed (Anonymous 1914:133-134).

An article in the local newspaper described the barracks, relics of another era, as still quite comfortable. They had "broad verandahs running entirely around . . . glassed in through the winter, thus furnishing a place where sunbaths . . . [could be] taken even in the coldest weather." The facilities had been upgraded with "a new system of toilet rooms, two to each company, and in sanitation and elegance . . . [comparing] with the best in the land" ("Togus National Home of Veterans and Heroes, a Little City in Itself," *Lewiston Journal Illustrated Magazine*, January 3, 1912)

NHDVS Era of Change, 1918-1930

World War I resulted in massive changes to American society – and the NHDVS. About 4 million men were drafted with about half going overseas. By 1919 wounded, injured, and ill solders began flooding the American home front. The War Risk Insurance Act created expansive new benefits for World War Veterans – as well as a new federal bureaucracy. Initially, returning veterans were funneled into Public Health Service hospitals, but these resources were quickly overwhelmed. As Congress sought solutions, money was allocated to the NHDVS to improve their facilities (Julin 2007:35).

While the changes promoted improvements in the Homes, they also diluted the importance of the Board since both the Public Health Service and the Treasury Department were involved in aspects of care and management.

In 1921 Congress established the Veterans' Bureau to administer the laws affecting World War I veterans. Replacing the Bureau of Risk Insurance and administrative authority for vocational rehabilitation, the Veterans' Bureau

was soon mired in controversy. Meanwhile the NHDVS found itself with a dramatically changing clientele. While formerly the Homes had cared for elderly veterans, the new population was far younger and many had serious psychiatric problems. In 1928 Congress further transformed the Homes by extending membership to disabled women who had served as military nurses (Julin 2007:36).

In 1930 Congress passed the World War Veteran's Act (P.L. 71-536), authorizing the President to create the Veterans Administration and dissolve the NHDVS, consolidating the various programs affecting veterans. President Herbert Hoover subsequently issued Executive Order 5398 on July 21, 1930, consolidating the Veterans' Bureau, Bureau of Pensions, and the NHDVS into a new entity, the Veterans Administration (Julin 2007:37). The NHDVS became the Bureau of National Homes within the VA.

One of the last detailed reports in this era reveals that Togus had seen relatively little change by 1919, although the average members present had declined from over 1,800 a decade earlier, to just 897. There were 107 vacant beds in the Togus hospital. The average age in 1919 was 67 years (just a year younger than a decade ago)and the bulk of the members were still Civil War veterans (Anonymous 1920:74). For the amusement of the members there had been 282 band concerts, 126 motion picture shows, and 30 baseball games. The library was still operating, as was the theatre, store, and a clubroom. The only construction activity on the campus was repair work, including reroofing, repairing bridges, repairing foundations, overhauling the Home wharf, repairing sidewalks, and painting (Anonymous 1920:80).

By the mid-1920s the band had been discontinued ("Lone Woman Interred at Togus," *Lewiston Journal Magazine*, May 25, 1963). Edgington and his colleagues indicate there was no new construction during this period (Edgington et al. 2011:8), further confirming that Togus remained essentially frozen in time during this last era of National Home activities. In 1927 a barn, built in 1896, and storehouse at Togus burned (*Lewiston Evening Journal*, August 11, 1927). In 1929, on the eve of the VA assuming control, a fire partially destroyed a wing of the main hospital. Congress appropriated funds for a new, fireproof hospital; however, construction did not begin until 1932.

The Modern Period Under the VA

By 1931 Civil War veterans comprised only 3% of the Eastern Branch. Spanish-American War veterans accounted for an additional 25%, but World War I veterans accounted for the vast majority of members, 1,017 or 72%.

The first annual report under the VA described the campus,

> The reservation comprises 1,884 acres – 62 acres are included in lawns, parks, cemetery, and about 10 miles of roadway – 450 acres used for farming – 610 acres of woods, and 762 acres of pasture. A dairy is operated with 43 milch cows – 29 other cattle in herd. There are 50 buildings on the reservation, including 7 barracks – 6 brick and one 1 frame, maximum capacity 957 members, 2 hospital buildings – both frame, maximum capacity 317 patients; and 41 other buildings, including storehouses, mess hall, power house, theatre, chapels, library, etc., of which 4 are brick and 37 frame (quoted in Edgington et al. 2011:64).

The new hospital, begun in May 1932 and completed in October 1933, was sited northwest of the main campus, in an undeveloped area that had historically been the Deer Park. Elevated above the remainder of the Home and with the topography inclining steeply behind the building, the new hospital became the most prominent feature of the new VA facility (Edgington et al. 2011:8).

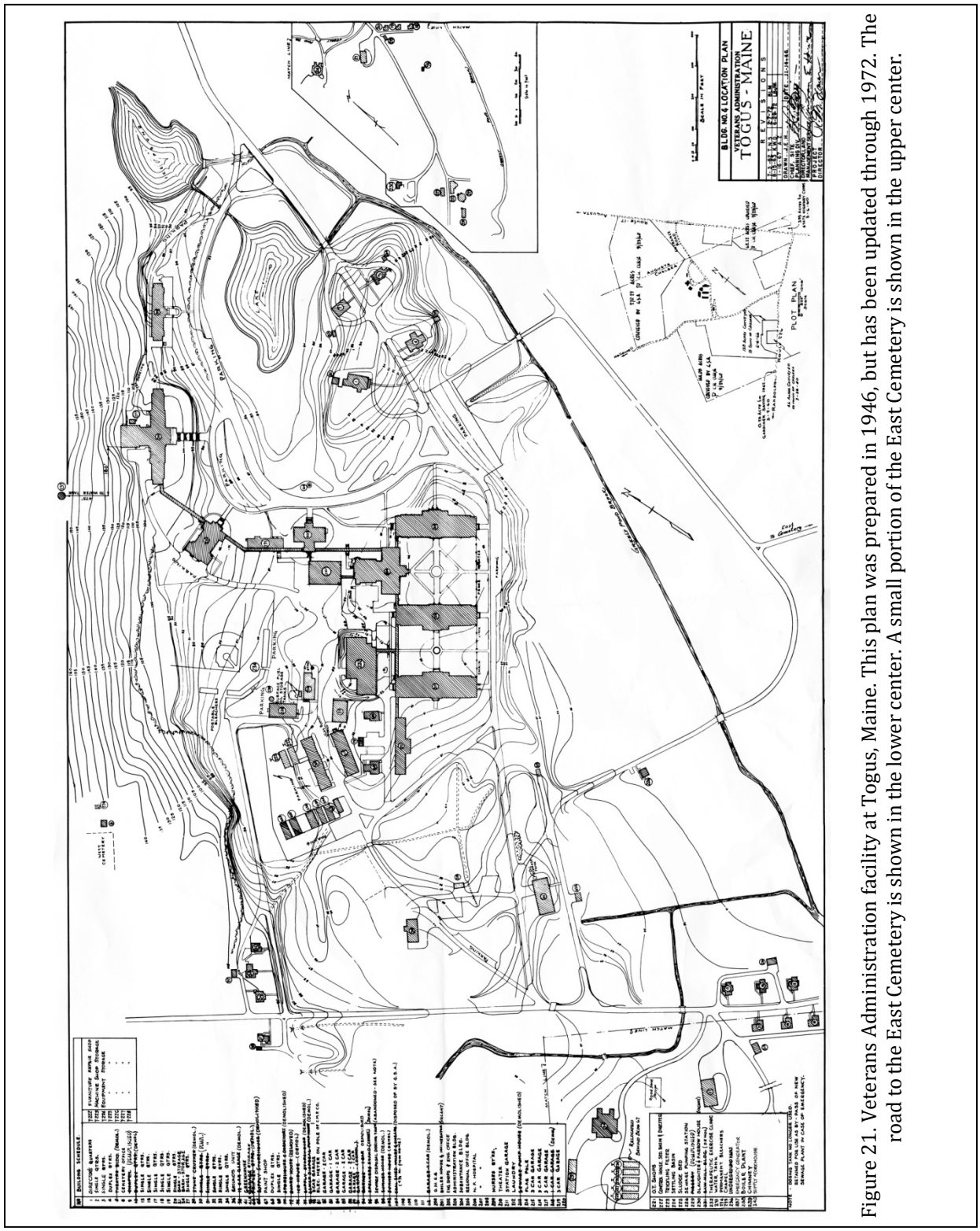


Figure 21. Veterans Administration facility at Togus, Maine. This plan was prepared in 1946, but has been updated through 1972. The road to the East Cemetery is shown in the lower center. A small portion of the East Cemetery is shown in the upper center.

Plans were well underway to modernize the entire facility, including a new Boiler Plant, Utility Building, new barracks, a kitchen and dining hall combination, an administration building, a nurses' home, a laundry, and a new recreation building.

This modernization, however, came with a steep price: the demolition of a very large number of historic structures on the campus. Some were utility buildings, such as former shops, the power house, coal shed, and fire station. Others, however, were major features on the historic landscape, such as the brick barracks constructed when the original hotel burned in 1868 (see Figure 14). The demolition of these structures began on March 21, 1935 with the work conducted by the Boston firm of Robert R. McNutt ("Razing of Old Barracks Togus Home Starts Today," *Lewiston Evening Journal*, March 21, 1935). Beattie (2007:40) briefly described the demolition of the "wooden towered opera house," hotel, and theater.

By 1940, 62 of the historic structures had been demolished and in 1941 parking lots were seen on the landscape – features that had never before been needed. In 1943 some of the new barracks were repurposed as neuropsychiatric facilities. Edgington and his colleagues itemize the extant buildings on the facility, finding that 20 of the 71 structures (28%) date from the 1930s and 50 (70%) date from the 1930s through 2010. While 42% of the structures in 1913 dated from the 1890s, less than 10% of the structures date from the 1890s today. Smith (1998:7) notes that between 1932 and 1960 over 60 structures were demolished.

In spite of 16 structures built after 1970 (by which time the National Historic Preservation Act mandated archaeological evaluations) – and construction ongoing currently – the facility has never received any professional archaeological investigation or survey.

In 1985, however, then VA Archaeologist Donald R. Sutherland apparently noted some dump sites that had been found at Togus (Beattie 2007:275-276). A large number of artifacts had been recovered from these archaeological sites, many of which are still apparently at the VA Library. Unfortunately, no site form for the dumps was ever filed with the Maine Historic Preservation Commission (Dr. Arthur E. Spiess, personal communication November 17, 2011). It seems clear, however, that significant archaeological sites relating to the NHDVS may be present on the VA property.

The VA saw an increasing need for hospital beds, combined with a decreasing need for domiciliary care. Throughout the 1930s Togus reported a large number of beds available for domiciliary use, as opposed to relatively few beds available for hospital care. As a result, the domiciliary program at Togus formally ended in 1943. Residents were sent to other VA facilities where the housing program was being maintained and Togus began it focus on general medical, surgical, and neuropsychiatric activities (Edgington et al. 2011:66).

Figure 21 shows a plan of the facility, prepared in 1946 and updated through 1972. Of special interest on this plan is a small map showing that sizable portions of the facility's property that was eventually determined to be unneeded and was sold, primarily in the 1960s, by the General Services Administration.

The Togus facility was merged with the Portland, Maine Regional Office of the Veterans Administration, further consolidating veterans care in the State of Maine (Anonymous 1938).

In 1989 the Veterans Administration was elevated to Cabinet status and renamed the Department of Veterans Affairs.

Death at Togus

The Lost Cemetery

Death was a constant companion at Togus; as Spalding observed, "the hospital first, the cemetery next" (Spalding 1886:9). The first death at Togus was that of August Moller, who entered the facility on November 23, 1866. His disability was identified as "Phthisis Pulmonalis"

in the third (or final) stage. This was an archaic term for tuberculosis and the patient died on March 30, 1867. The Togus Register notes that he was buried in the "Asylum Cemetery, Series 1, No. 3."

The second death was that of Michael Turisk who entered on February 12, 1867 with problems associated with both a wound and also tuberculosis. He died on March 3, 1867. Unfortunately, his record is difficult to read, and only "Asylum Cemetery" can be discerned. The third death, that of James West, was less expected. West entered the Home on February 6, 1867 with scurvy and heart disease. His death occurred on March 13, 1867 at 3am when he was struck "by a man named Andrews in a drinking shop, and fell dead." He, too, was buried in the "Asylum Cemetery, Series 1, No. 2." Beattie (2007:186) identifies West as James McLaughlin, but fails to provide a source for the information.

All of these individuals were apparently buried in a graveyard originally established very close to the Home. A modern source notes that,

> The one opportunity that General [Charles] Everett [the second Governor of the Eastern Branch] had to leave a permanent reminder of his brief administrative regimen at Togus was soon dissipated by Major Cutter's [the third Governor] decision to move the cemetery from the site which his predecessor had selected. He [Cutter] preferred the attractive hilltop spot west of the Asylum grounds, and this became the permanent burial ground of the institution. The bodies of the six veterans who thus far had died were taken up and reinterred in the new location (Veterans Administration 1977:12, 60).

This information is repeated by the VA website where it is explained, "The older West Cemetery was established in 1865 and moved to its present location west of the home about 1867" (http://www.cem.va.gov/cems/nchp/togus.asp, accessed November 10, 2011). Unfortunately, we have been unable to identify any historical documents that identify the location of the original cemetery or that any burials were removed.

The West Cemetery

The earliest documented feature in the West Cemetery, other than burials, is the construction of the granite vault at the east edge of the cemetery. The pediment of the vault is carved "1868," although we have found no additional information concerning its construction. It was apparently used until about 1930 ("Lone Woman Interred at Togus," *Lewiston Journal Magazine*, May 25, 1963).

Perhaps the earliest account of the cemetery comes from the *Kennebec Journal* description of the June 22, 1870 Memorial Day events. The article observed that, "since the decoration last year the little mounds have increased from eighteenth to thirty-three. Marble headstones of uniform size have been placed on each grave" (quoted in Veterans Administration 1977:25). The article described the cemetery as "a lovely spot, in the midst of the native forest," suggesting that a relatively small area had been cleared.

The Memorial Day celebration in 1876 was reported by the *Kennebec Journal,*

> Each year, as Memorial Day approached there were more of the elaborate wreaths of flowers and evergreens needed than ever before, for decorating the graves in the cemetery. Death was a frequent visitor at Togus, and the rows of headstones steadily lengthened and grew in number. Each veteran who died was buried alongside the comrades whose death preceded his; soon another comrade would be on his other side. The site of each

> veteran's grave was determined simply by the time of his death. Factors of color, range and religion were of no great importance; for, after all, they all had been soldiers together (*Kennebec Journal*, March 29, 1876).

The following year's celebration was again detailed by the newspaper, which described the various songs and hymns, as well as the music played by the Home band. By 1877 there were 167 "green mounds" (*Kennebec Journal*, June 20, 1877).

The cemetery, containing 194 burials, was described by William Whitman in 1879,

> on the hill in a sylvan spot well adapted as a resting place for the dead. When a soldier dies, the flag is hung at half mast, and his remains are escorted by his comrades to the place of interment. A dirge is played by the band, and appropriate services are conducted by the chaplain. The graves of the cemetery are all arranged in regular lines, and each one is marked by a head-stone giving the name, age, company, regiment and State of the deceased (Whitman 1879:70).

There is evidence that both the cemetery and grounds of Togus were decorated with condemned cannons and cannon balls. Such devices were already becoming scarce when the *New York Times* reported in 1884 that only a small number were left for a seeming unlimited number of requests. The article noted that "the usual number asked for being four, with four cannon-balls" ("The Demand for Old Guns," *New York Times*, February 29, 1884). By February 1889 Congress specifically authorized the Secretary of War to provide any NHDVS facility requesting condemned cannons up to two obsolete guns. In 1896 Congress also authorized the Homes to procure unserviceable cannon balls as well – so it is likely after this date that the cemetery began being decorated with cannon balls set on concrete corner posts and other devices.

In 1885 the annual report for the Eastern Branch provides a listing of how members were employed at the Home. We learn that 40 were selected as "funeral escort" and an additional eight were listed as "grave diggers" (Anonymous 1886a:78). Just a year later the number of funeral escorts had been reduced to five, although there were still eight grave diggers (Anonymous 1886b:91). The number of these employees fluctuated, but in 1888 the Home added an undertaker (Anonymous 1888:91). We have not identified evidence that members buried at the Home Cemetery were being embalmed, although that is certainly possible. It seems more likely, however, that the undertaker was preparing the bodies of those members being shipped to family or friends for burial.

An account of how death and burial were handled is provided in 1886 by Henry Spalding,

> When deceased, the body is washed, dressed in a new white shirt, collar and necktie, a new uniform suit, the corpse placed in a coffin, and a notice of death sent to the Governor, and a member of the Council of Administration. A telegram is immediately sent to his nearest friend: "John Jones is dead, what disposition shall we make of his body?" . . . If no answer is received to the above telegram, or request for the body, arrangements are made for the funeral. The clergy-man is notified, a detail of 40 men made, under the command of a sergeant, who has charge of the ceremony. The men are required to appear in full uniform, with person and clothing neat, they are furnished with belt and white gloves. Six are selected as pall bearers. After the funeral

> services in the hall, the line is formed in the following order, National Home band, hearse with bearers, firing party, a corporal and six men, detail, etc. While the body is being lowered into the grave, the band plays a dirge, the firing party present arms, and the detail salute, three volleys are fired over the grave, and t'is done, we have paid the last tribute to the dead; the living now have our only claim, and to the tune of "Marching thro' Georgia" with quick step we return, break ranks, and resume our ordinary routine (Spalding 1886:12-13).

Describing the cemetery Spalding notes that it is,

> situated on a gentle acclivity about half a mile due west from the "Home." It is a lovely spot in summer, made beautiful by the green verdure and the foliage of the oak, maple and birch. Here sleep 508 brave true men. . . . The graves are in regular order, all marked by the modest headstones furnished by "Act of Congress." Here and there are tablets bearing suitable inscriptions, each mound is marked with a tiny flag . . . . There is a large vault where bodies are placed in winter when the earth is frozen too hard to excavate graves. Much care is devoted to this spot, by our executive, and visitors who fail to visit the cemetery have missed one of the most interesting points (Spalding 1886:13)

Just a year later a newspaper article placed the number in the cemetery at 625 and noted further that, "but comparatively few bodies have been claimed by friends" ("Togus Home Notes," *Kennebec Journal*, October 22, 1887).

In 1888 the *Kennebec Journal* reported that the contract for supplying the headstones used at the West Cemetery had been awarded to Augusta resident H.M. Faught, who also held the contract in 1886 and 1887. About 75 stones were to be included in the contract at a cost of $4.13 each (Veterans Administration 1977:88).

During this period Henry Faught was a clerk in his father's grocery store and was listed in the 1882 city directory (Pierce 1882) as a horse dealer. By 1920 he was living in Boston and working as a salesman for stocks and securities. Clearly Faught was never a stonecutter, but was apparently serving as a middleman. The 1882 city directory identifies only two stone cutters or masons in Augusta, Charles F. Stone and John Barter.

Togus did not begin receiving government stones until 1890, when those being manufactured locally and those provided by the Quartermaster were both in use. It was 1891 when only government stones are used in the East Cemetery.

In 1889 the *Kennebec Journal* told their readership that,

> All the other National Home cemeteries are furnished by the Government with large, beautiful and costly monuments, but as Togus is in somewhat of an out-of-the-way place, it has been overlooked in this matter. General Stephenson determined to remedy the deficiency, and the result is we are to have a beautiful monument, unique in its kind and having a parallel in none of the other homes . . . . [The] design was drawn by William H. Spaulding, an inmate of the home and a former marble worker in Philadelphia, who is builder of the monument. All stone work and dressing is under the supervision of Jeremiah O'Brien, also an inmate but

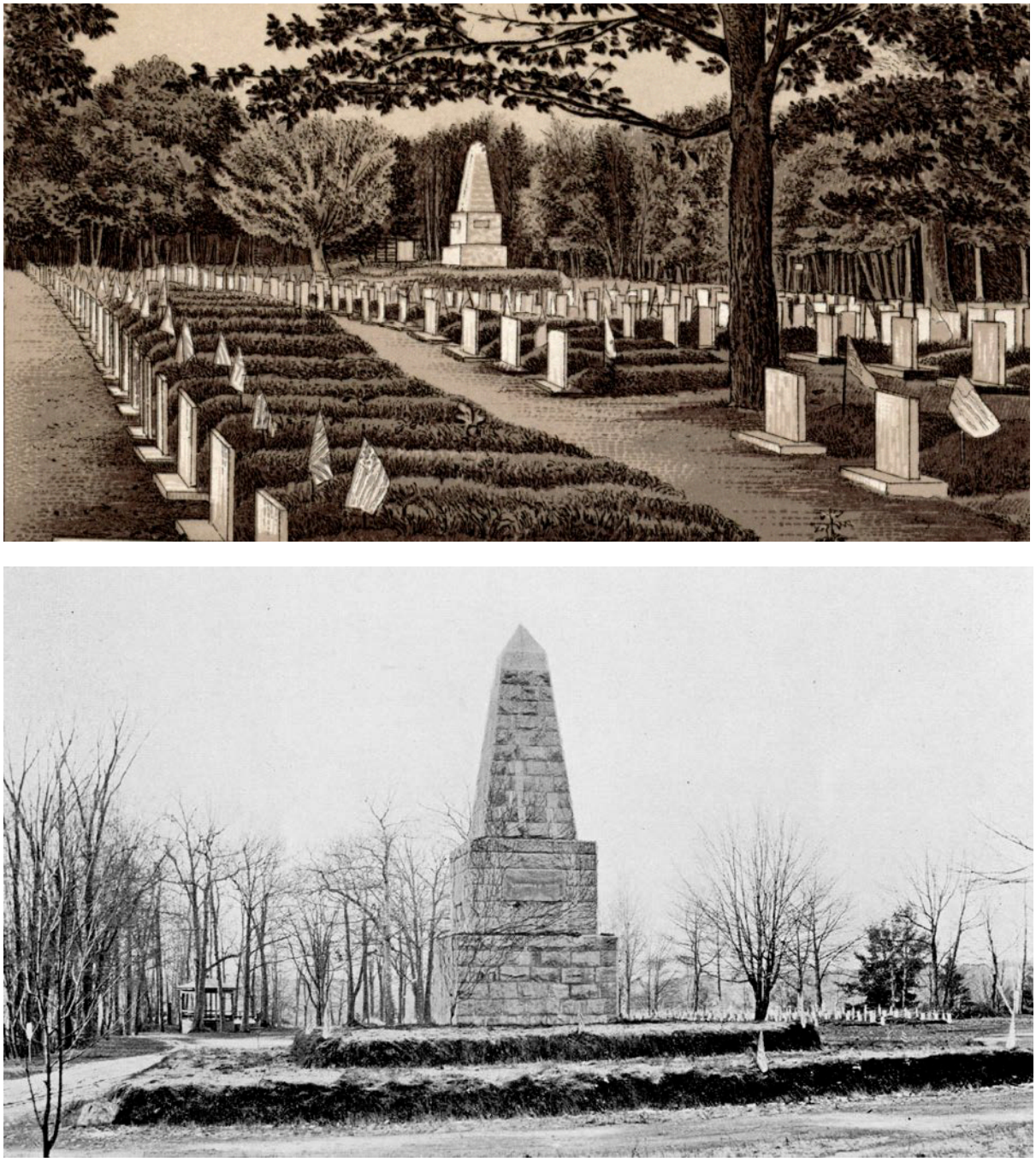


Figure 22. The West Cemetery about 1890. The upper photo shows Section C with the recently completed Soldier's Monument in the background. Graves are mounded, with the stone sockets set above grade. The lower photo shows the newly completed Soldier's monument looking south. Note that cannon balls have not yet been used to decorate the terracing. At the left side of the photo is the band stand in the cemetery. Just beyond and out of sight is the granite vault.

Figure 23. Burial at the West Cemetery between 1894 and 1910. The casket has been lowered into the grave, but the lid of the outer box (at the far left) has not yet been attached. Visible on the lid is a card attached to identify the individual. In addition to the graves marked using military stones, there are also a number of graves marked with metal funeral home plaques. In addition to the funeral detail and bugler, the photo may show the minister to the right of the firing squad, as well as several grave diggers probably waiting to fill in the grave after the funeral. Note that recent graves are mounded.

formerly a noted stone-cutter of Quincy, Mass., and Westerly, R.I. The extreme height will be 27 feet, 6 inches; first base of rough hewn granite, 7 feet; second base, 6 feet; shaft, 11 feet; cap stone, 3 feet; peek 3 feet 6 inches; and it is hoped that the peak will be surmounted by a golden eagle, or some other patriotic design. On the four squares of the second base there will be a large square of polished granite, suitably engraved" (*Kennebec Journal*, September 11, 1889).

The monument, described as adding "very much to the beauty of the place" was completed in 1890. The description was essentially the same as provided by the Kennebec Journal, although the overall height was reported as 31 feet; the lower base was reported as 10 feet square and the upper as 8 feet square. The granite was also reported to have been quarried "on the grounds of the Home." It was noted that the monument's "rough simplicity" was a "source of pride to the men, especially because the work was performed entirely by members of the Home" (Anonymous 1890:105).

The tablet on the monument's southwest

elevation originally contained only the "War with Great Britain," "War with Mexico," and "War of the Rebellion" (*Kennebec Journal*, November 30, 1889). At some later time the "Philippine Insurrection" and "World War" were added (Beattie 2010:240). Some sources identify these plaques as bronze (see, for example, "Lone Woman Interred at Togus," *Lewiston Journal Magazine*, May 25, 1963). These identifications are in error – all of the plaques are polished granite.

It is likely that from the initial construction the monument included stacked cannon balls at the corners. These features continued to exist through at least the mid-1970s. In addition, in the mid-1960s "at the front of the statue, one in each corner, are two one-pounders (mortars) also used in the Civil War" ("Lone Woman Interred at Togus," *Lewiston Journal Magazine*, May 25, 1963). What became of these mortars and cannonballs has not been determined.

In 1894 we find that members providing funeral escort had increased to 21. There was still an undertaker, although only one member was being hired to dig graves. For the first time we find a member employed and placed in "charge of cemetery" (Anonymous 1894:100).

Although the cemetery is not specifically mentioned, we have found that in 1895 the Home apparently spent considerable effort constructing "and perfecting" roadways and paths (Anonymous 1895:20). This work was apparently noticeable since the inspection that year commented on the roads and paths, noting,

> Within a swampy, rocky, and uninviting environment, 5 miles removed from any view of the valley of the Kennebec River, any improvement in the buildings or grounds of this Home is certain to be appreciated (Averell 1895:20).

The following year we find that "a pleasant driveway has been constructed through the woods from the deer park to the cemetery" (Anonymous 1896:96).

Averell also commented in 1895 on the cemetery itself, noting,

> The secluded cemetery established upon a rocky elevation near the Home promises to be as enduring as the pyramids of Egypt. The entire cemetery, with its impressive monument, rests upon the eternal granite in which some of the graves were excavated. No agriculture, manufactures, or search for minerals will ever disturb this hard old solitude (Averell 1895:24),

The inspection of 1896 provides important information concerning the cemetery and its operation. We learn that the cemetery was in "excellent order" and that funerals at the Home cost $10.49 each, not including care of the cemetery and graves. The graves are excavated out of "almost . . . solid rock."

Coffins, at least by this time, are not made at the Home, but rather are procured from Augusta under contract at a cost of $3.50 each. The Eastern Branch was one of three that procured coffins in this manner, with costs ranging from $3.50 to $8.45. Where coffins were produced at the Home the costs ranged from $1.41 to $3.46 (Anonymous 1897:110).

As had been reported by Spalding in 1886, members were still being buried in "uniform clothing." This inspection also revealed that the "drivers of hearse," funeral escort, and gravediggers were all considered to be hospital employees, suggesting that all burial functions were operated out of the hospital (Anonymous 1897:22).

Nearly three-quarters of all who died at the Home were buried in the cemetery in 1897. The inspection that year commented that the cemetery was well maintained, although "it is

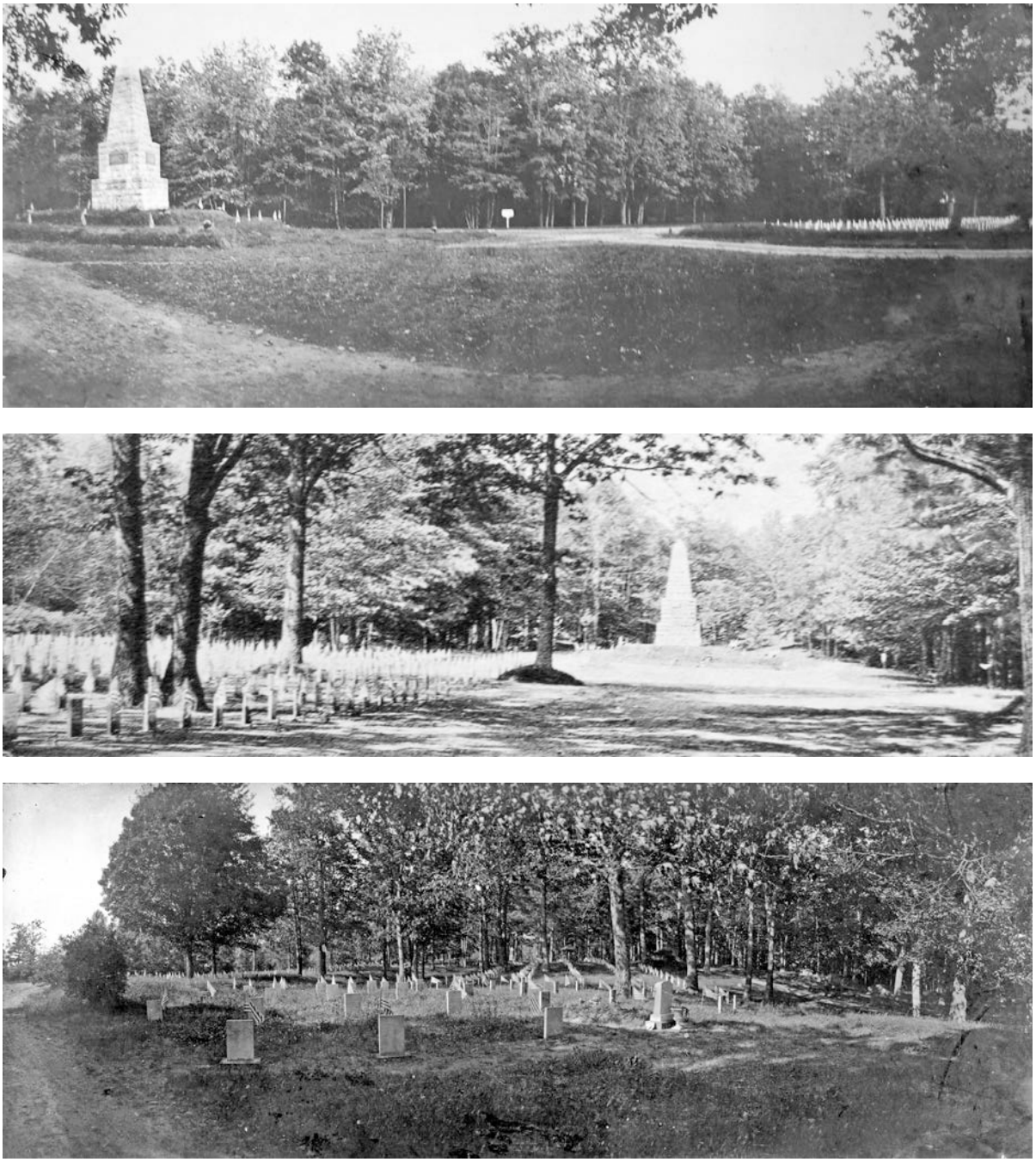


Figure 24. Panoramic views of West Cemetery about 1900. The top photo shows the Soldier's Monument and Section C looking southeast. Note a form of trail marker no longer present. Middle photo shows the Soldier's Monument and Section C looking north. The bottom photograph shows the original monuments with the sockets set above grade.

Figure 25. Memorial Day celebrations at West Cemetery, ca. 1909. The upper photograph shows the procession from the Home to the cemetery. The lower photograph shows the members standing by each of the graves prior to laying flowers on the grave. Note the young tree in the foreground, indicating that efforts were being taken to landscape the cemetery grounds.

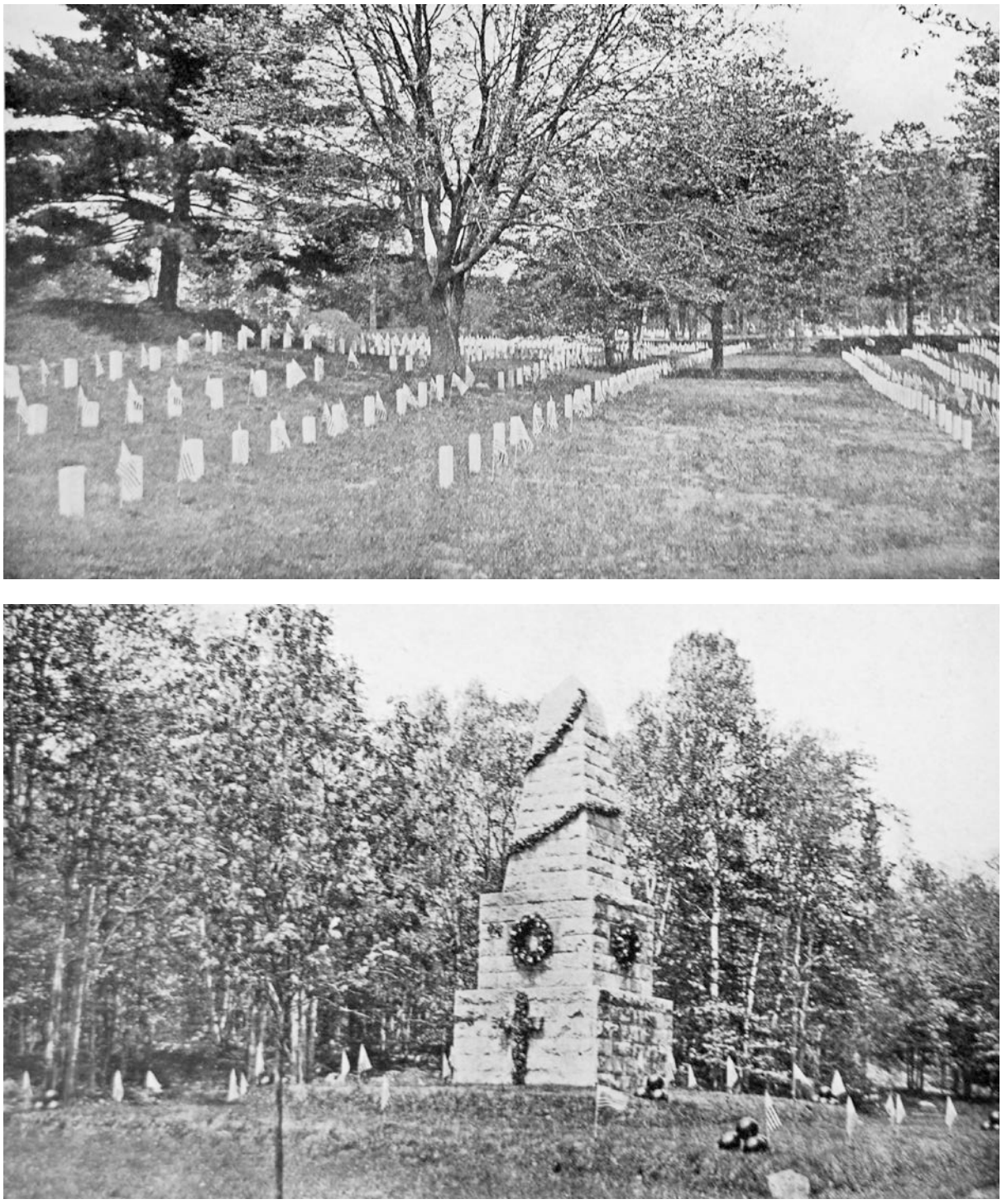


Figure 26. Memorial Day Celebrations at West Cemetery, ca. 1909. The top photo shows Sections I and J looking northeast. The bottom photo shows the Soldier's Monument looking northwest. Cannon balls have been placed at each corner of the two-tiered terrace.

Figure 27. Additional views of the Soldier's Monument. On the left is a ca. 1906 postcard. On the right is a photo from ca. 1920 showing that cannon balls are still present and the roads are still dirt.

believed a national cemetery here would be more presentable" (Anonymous 1898:36).

The next cemetery account comes from a brief narrative prepared in 1898. It was reported that 1,458 were buried in the cemetery by that time, while an additional 748 (34%) had been "taken away by friends . . . or died while absent" (Warren 1898:6).

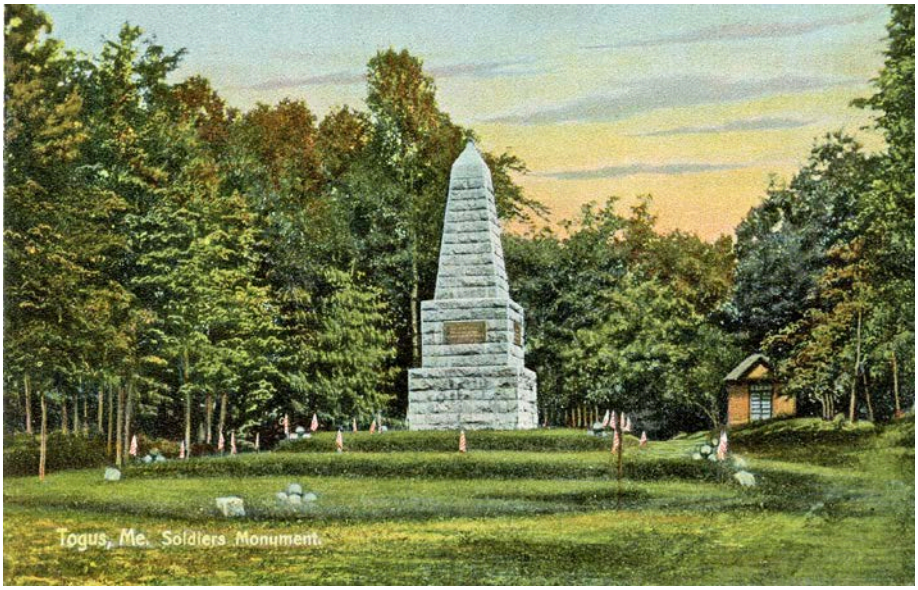


Figure 28. A ca. 1910 view of the Soldier's Monument. In the rear on the right side is the probable tool house that made its appearance about 1890 and was still present in 1913.

The 1898 inspection verifies this figure, noting that "about 66.7 per cent of the members who died were buried at the Home cemetery" (Anonymous 1899:16). The cost of these burials had increased to $23.99 with the notation that this was the highest cost of any Branch. This presumably includes the cost of the coffin (which had increased to $6.00) and uniform, as well as the various costs associated with the grave digging and escort (Anonymous 1899:16, 115). These figures did not change dramatically during the following year, although it was explained that the high cost of the funerals at Togus was the result of "the difficulty attending the digging of graves in a rocky ground." The inspector noted that many of the graves "had not yet been provided with headstones" suggesting that there was a substantial delay between burial and permanent marking (Anonymous 1900b:91).

The 1898 inspection also provides information on what constituted a uniform. For example, at Togus it included a dress coat, trousers, shirt, drawers, and socks – but did not include shoes. At the Northwestern Branch neither shoes nor underwear were used. At the Central Branch underwear and a shroud were used, while at the Western Branch in Kansas a blouse, trousers, socks, and a shroud were used (Anonymous 1899:115).

In 1890 a tool house was constructed in the cemetery; by 1913 the structure was appraised at $80, suggesting that it was a rather impermanent building (Anonymous 1914:134).

As early as 1900 there was a brief mention in the appropriations hearings concerning the need for a "new cemetery," the Managers complaining that, "our cemetery there is on top of a large hill, and we have actually to go up and blast out every grave" (Anonymous 1900a:202).

In 1901 Memorial Day was celebrated for the first time on May 30. Previously, the Maine climate had postponed the celebration until June 17 (Veterans Administration 1977:212).

In 1902 the Home opened a new burial ground, known today as East Cemetery, although Section I in the West Cemetery continued to be used. We assume the development of the new cemetery was a result of the labor involved in the West Cemetery as expressed in 1900. Burials,

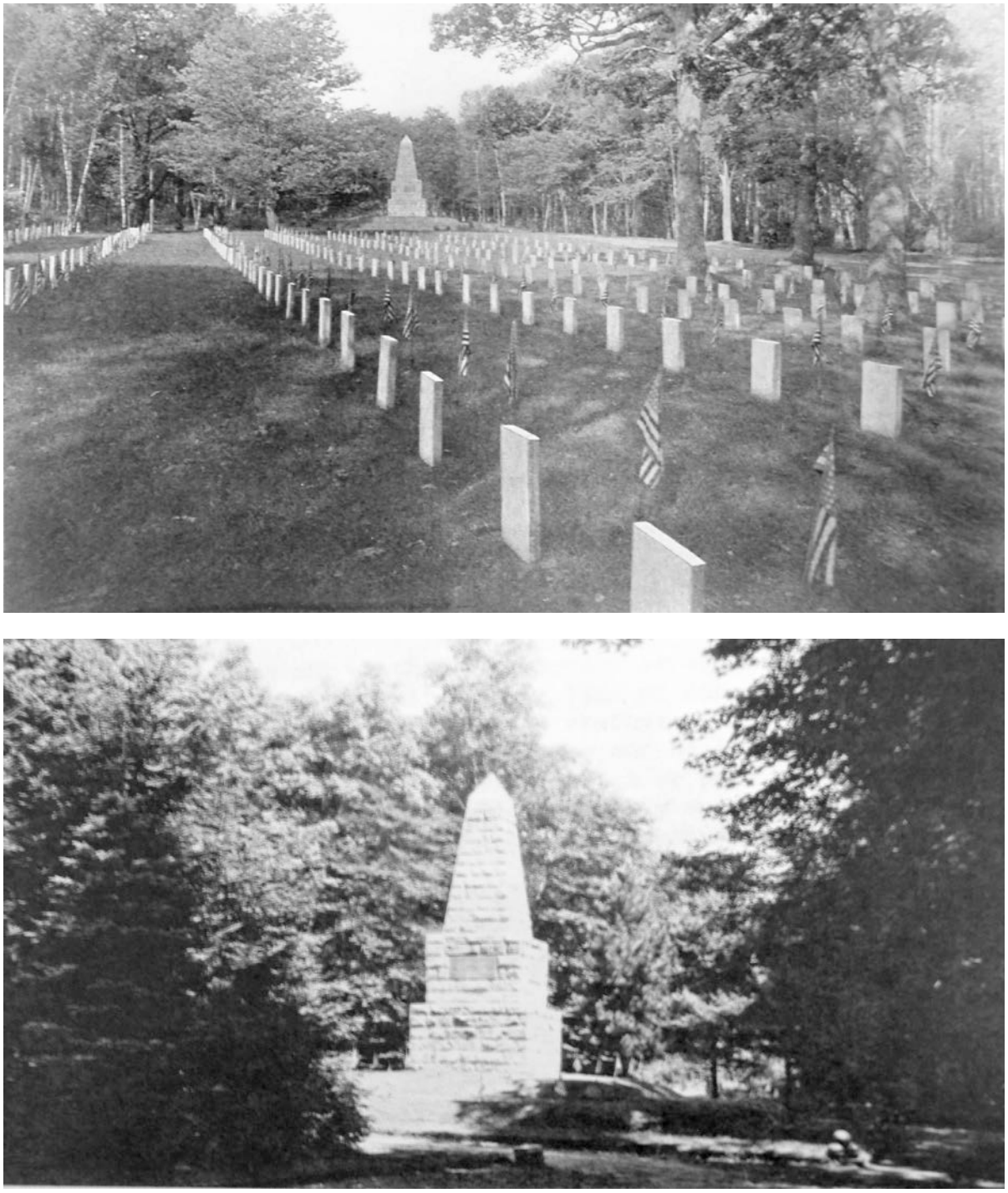


Figure 29. West Cemetery during the first quarter of the twentieth century. The top photo shows Sections C and D looking northeast with the Soldier's Monument in the background. The stones' sockets are now covered by soil and grass. The bottom photo shows the Soldier's Monument looking north.

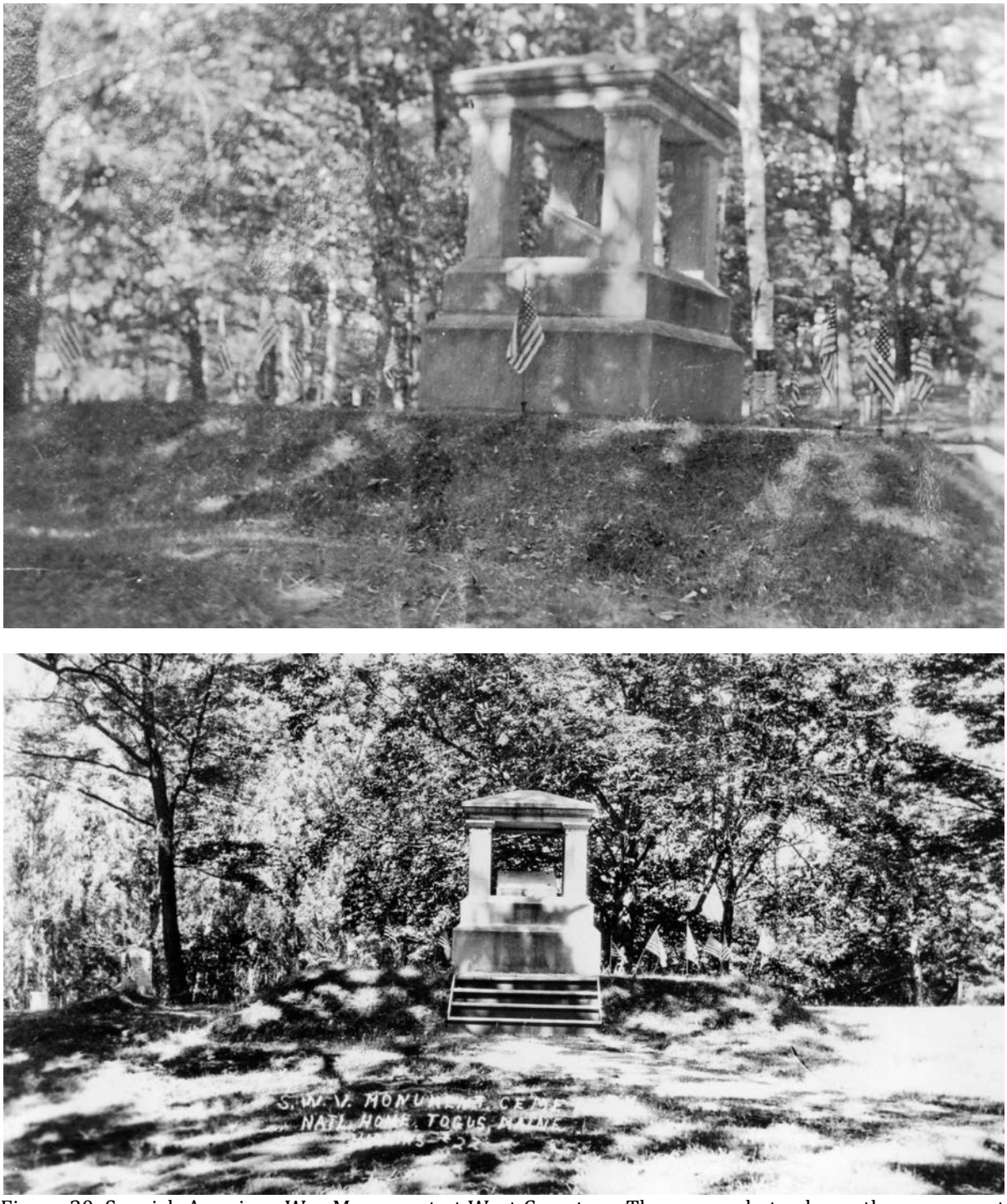


Figure 30. Spanish American War Monument at West Cemetery. The upper photo shows the monument ca. 1920 looking north. The lower photo shows the monument ca. 1928 looking northwest. The monument is not particularly well painted in either photo and the ca. 1928 view shows wooden stairs.

however, took place in both cemeteries.

By 1903 the number of members employed as the funeral escort had increased to 33. There were four grave diggers and there were by that time four undertakers (Anonymous 1933:105). This increase in the number of undertakers suggests that bodies may have begun to be more routinely embalmed. It appears that somewhere around 69% of those dying at the Home were buried in the Home Cemetery.

The 1906 inspection of the facility found extensive problems with the "New Cemetery," known today as the East Cemetery,

> Empty graves 5 feet deep [containing] from 3½ to 4 feet of water. . . . Owing to shallowness of graves and to oozing of water from same, the stench in the cemetery is at times sickening; so bad, in fact, had it been during the spring and summer that the placing of headstones was impossible. It is recommended that use of this cemetery be discontinued until the ground can be properly drained. There is considerable ground available in or near the old cemetery [West Cemetery], sufficient to meet the needs of the branch for several years. The members of the Home appreciate the objectionable features of the new site, and many of them feel strongly upon the subject (quoted in Beattie 2010:405).

The East Cemetery continued to be used through part of 1907, but was then essentially abandoned, with all burials again taking place in the "old" or West Cemetery. Sections A and B were used from 1907 to 1913, afterwards other sections were used and subsequently reused as additional rows were added or rows were extended in order to obtain additional burial space.

Nevertheless, the first effort to obtain funding for the improvement of the old cemetery did not occur until the appropriations hearings in 1911 when $3,000 was requested. The Togus representative reported,

> We started a new cemetery a little while ago and buried a good many soldiers there, but it was very low ground and the graves began to fill up with water, and we thought of removing them and going back to the old cemetery, where we would have to get some more ground and do some blasting and filling in. While we were discussing the proposition of giving up the new cemetery, this finally decided us: One member made the remark, when the graves were filled up with water, that "it was bad enough to die at the home without being drowned afterwards," and that settled it in our minds. We have not buried any in the new cemetery since. It is too low ground. We will have to enlarge the old cemetery (Anonymous 1911:807-808).

In spite of that impassioned plea, Congress failed to provide funds for additional cemetery work and the Home was again requesting funds in the 1913 budget. The amount of funds requested increased to $5,000 and the Home laid out a fairly detailed plan,

> It is proposed to improve this piece of property immediately west of the present cemetery and fit it for burial purposes by properly grading the same, laying out and building the necessary driveways and walks, planting trees and shrubs, removing the stone fence between the new section and the old cemetery and rebuilding it on the side of the new section next to the Hallowell

> Road, building a fence around the remaining sides of the section, thoroughly repairing all the fences around the old part of the cemetery, removing weather stains from headstones, and marking other necessary repairs in the old cemetery (Anonymous 1912:904).

It was thought that the proposed improvements would provide additional burial space for about a decade.

It appears that Togus received funding since new burials begin in what are Sections K, L, and P in 1913.

Certainly death was big business at Togus. By 1907 one of the last accounts of members on extra paid duty revealed there were 48 funeral escorts, seven grave diggers, and five undertakers (Anonymous 1908:175).

The first identified Regulations for the Home that include the cemetery date from 1915 (although some parts, such as Article 310, were adopted as early as 1873). The regulations stipulate,

> 306. After the member of the Council of Administration, acting for the Council, shall have performed his duties, the remains of the deceased member will be removed to the hospital morgue, or other place designated for the purpose, and there prepared for burial, a clean suit of the Home uniform being used for this purpose.
>
> 307. Upon the death of a member notice of the fact will be at once sent to his nearest relative as indicated in his original application or otherwise known to the Home authorities. Such notice will be sent by the Governor, and will state time and place of the funeral. It may be sent by telegraph, and opportunity afforded for directions as to the disposition of the body other than by burial at the Home, if desired, provided, that in case of burial elsewhere than in the Home Cemetery the Home shall not bear any part of the expense of transportation or burial. [By 1918 it was added that the Home would provide the "casket and box"].
>
> 308. In all cases of death of members in the hospital, the remains shall, when prepared for burial, be carefully identified by the Surgeon or an Assistant Surgeon. An identification card in duplicate will be prepared upon the form adopted for such purpose, upon which will be entered the name, company and regiment, and date of death; one of such cards to be securely attached to the outside of the casket before it is placed within the coffin box, and the other to the coffin box. Should death occur elsewhere than in the hospital the identification will be made by the company commander or other person or persons personally acquainted with the deceased and competent so to do and the cards attached as above.
>
> 309. Funerals will be conducted in accordance with military usage, the honors prescribed by the United States Army regulations being paid. One of the Chaplains will officiate. The band of the branch will attend all funerals, unless the weather is too inclement, when it may be excused in the discretion of the Governor.

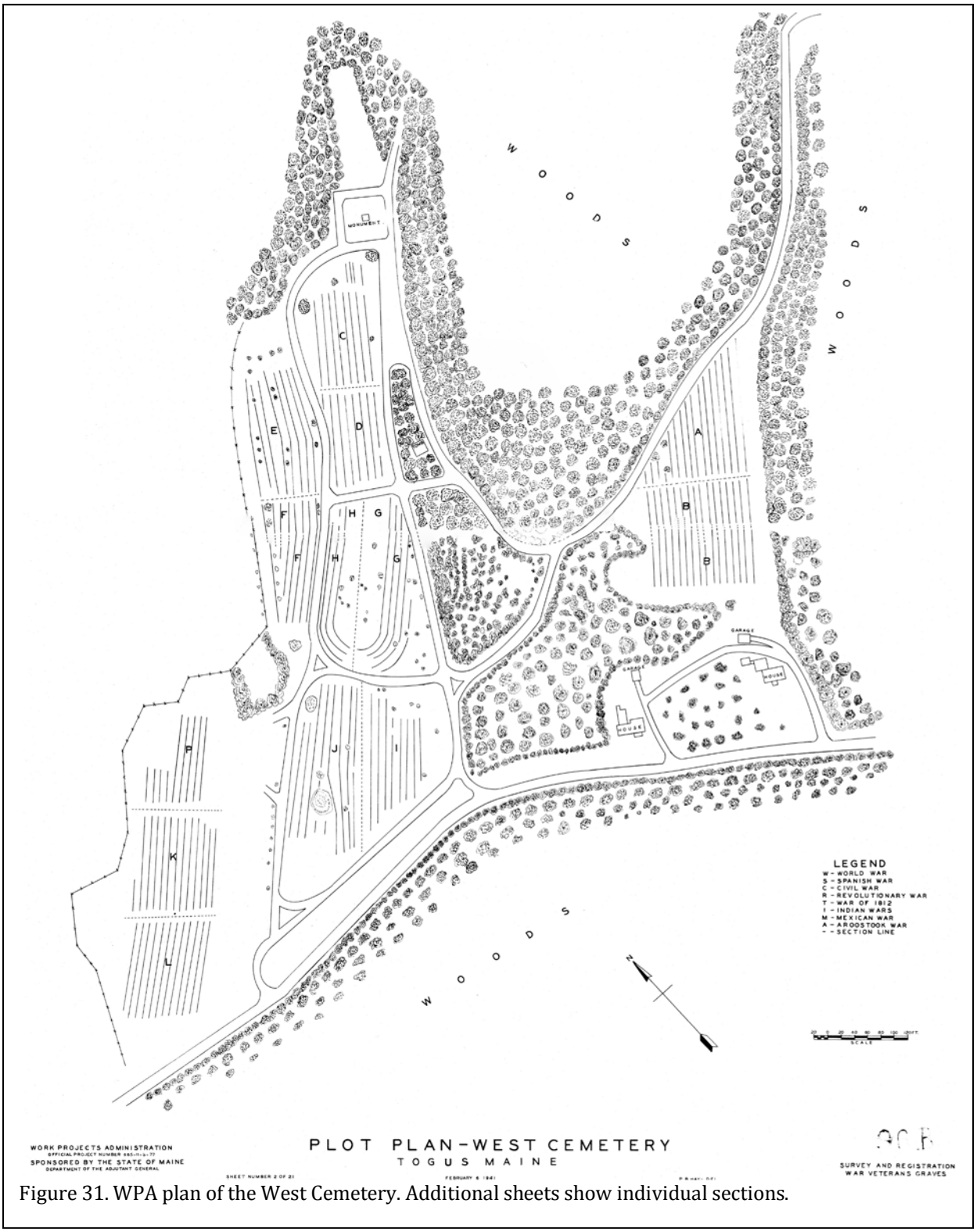


Figure 31. WPA plan of the West Cemetery. Additional sheets show individual sections.

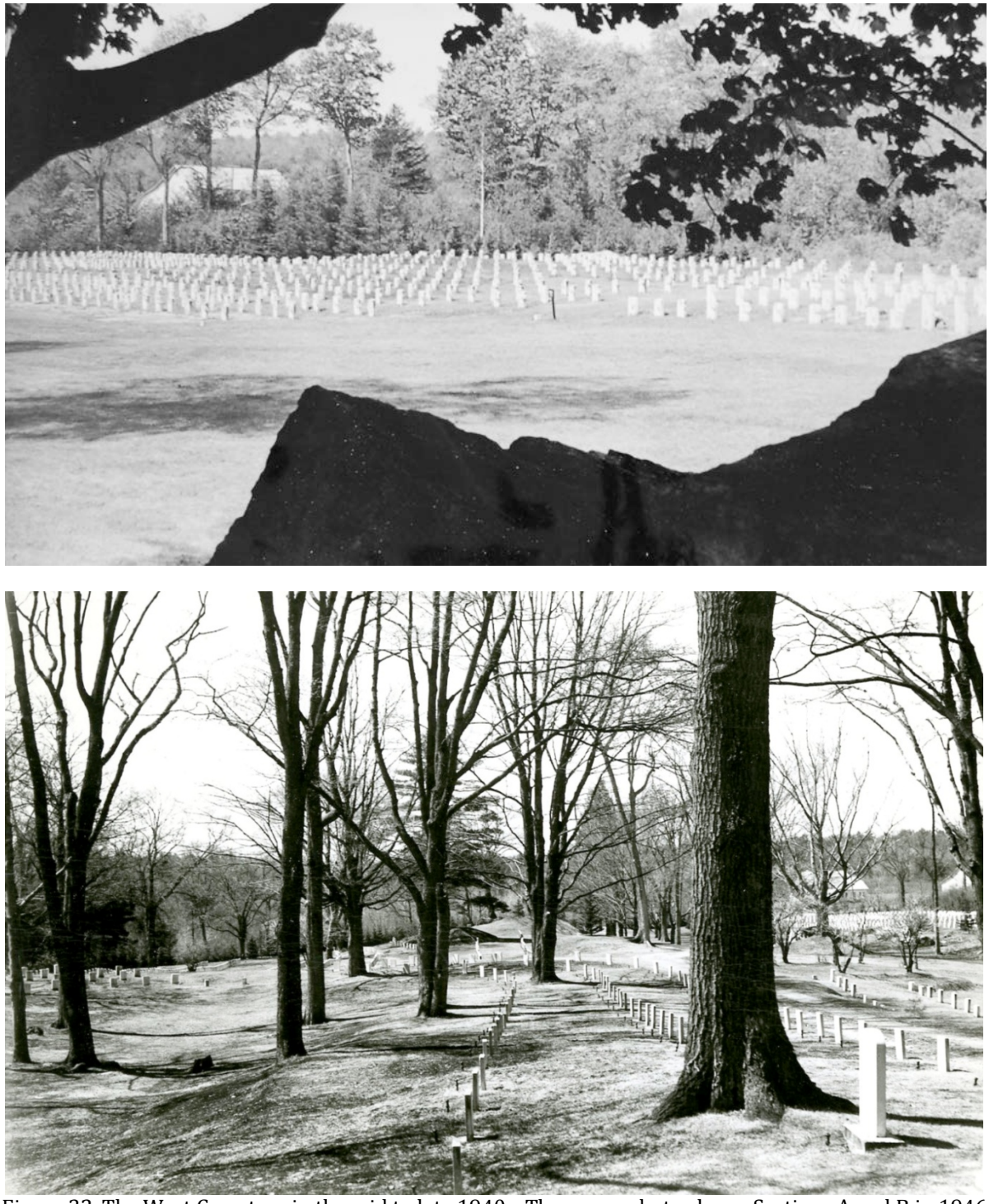


Figure 32. The West Cemetery in the mid to late 1940s. The upper photo shows Sections A and B in 1946 looking southeast. In the background is the roof of a house on the Home property. The lower photo shows Section G looking southwest in 1948.

Figure 33. The West Cemetery in 1948. The upper photo shows Sections C and D looking northwest. The lower photo shows Sections K, L. and P looking southwest.

Figure 34. The West Cemetery in the 1970s. The upper photo shows Sections E, F, and H looking northeast. The lower photo is at the Spanish American War Monument looking north.

Figure 35. The Spanish American War monument looking east in the 1970s.

310. The cemeteries of the Home at the several branches shall be laid out and cared for, as far as practicable, in the manner prescribed for National cemeteries. Graves shall be arranged in sections and rows and numbered in regular series to correspond with the burial record kept in the Governor's office. The marble headstones provided by the Government for members of the National Home for Disabled Volunteer Soldiers will be used to mark the graves semi-annual requisitions for the same being made upon the Quartermaster-General, U.S. Army, by the Governors of the several Branches. As some time is required to procure these stones, the grave of every deceased member will, as soon as interment has been made, be marked with a temporary wooden board or tablet, giving name, company, regiment, and date of death (Anonymous 1915:64-65).

In 1916 the second monument in the cemetery was constructed. This is a rectangular white-painted concrete monument adorned with columns on each corner, a small roof on top, and a marble inscription plaque on front honoring soldiers and sailors who died during the Spanish American War. The history behind this monument is not well known, but we have identified that the $250 necessary for its construction came from the Post Fund (Anonymous 1917:98). Sometime after the mid-1960s a bronze tablet, cast from metal recovered from the U.S.S. Maine and mounted on the front of the monument, was stolen ("Lone Woman Interred at Togus," *Lewiston Journal Magazine*, May 25, 1963).

By 1919 the cemetery was cared for by the Farm. Devoted to the cemetery and roads

were 12 employees with a budget of just over $3,800 (Anonymous 1920:81). By this time the report no longer lists how members were employed, so the number of funeral escorts, grave diggers, and undertakers cannot be determined. There were, however, 83 burials in the cemetery, representing just over 53% of the deaths. There were 3,705 reported burials in the cemetery with a total capacity of 5,082 graves (Anonymous 1920:84).

The 1930 law that created the VA also made the cemeteries associated with this – and the other Homes – properties of the Veterans Administration. While monuments continued to be provided by the Quartermaster, the cemeteries themselves were being cared for by the VA. The cemeteries on various hospital properties, many originally created by the NHDVS, were known as "station cemeteries." They were used for the burial of veterans dying in a VA hospital or pauper veterans whose bodies were unclaimed (November 25, 1958 letter from VA Center Manager, M.L. Stoddard to Representative Frank M. Coffin).

One of the changes documented from the late 1930s was the abandonment of the caisson in favor of an ambulance that had been converted into a hearse ("Lone Woman Interred at Togus," *Lewiston Journal Magazine*, May 25, 1963).

In 1941 the WPA prepared a series of maps showing the West Cemetery and its stones. Although the cemetery was inactive by this time, the resulting map (Figure 31) provides a clear view of the cemetery during the early twentieth century. Shown are the road system, monuments, and even the bandstand that was still present (and shown in several photographs). What is not shown is the tool shed that was reported in the cemetery between 1890 and 1913, suggesting that it had been removed by this time. The plan shows the fence along the west side of the cemetery, separating it from the adjacent pasture. Also shown are two houses at the southeast edge of the property, along Hallowell Road.

Although the road system has not changed dramatically between 1941 and today, a variety of roads have been abandoned. For example, there was originally a road that entirely encircled the Soldier and Sailor's Monument. There was a road that paralleled Hallowell Road between the two cemetery entrances. There was also a turn in at Section P.

A 1951 visit briefly mentioned the morgue in the basement of the hospital, noting that 60% of the deaths were autopsied, but failing to comment on the cemeteries (Beattie 2007:93).

By October 24, 1958 the VA adopted a policy of not further expanding these existing station cemeteries,

> Areas designated for use as cemeteries as of October 24, 1958 will not be exceeded or added to, but will be utilized to the maximum extent consistent with the decorum of burial. Vacant graves in existing cemetery areas will be used until the areas are full. Thereafter, deceased veterans dying in VA hospitals will be buried in national or private cemeteries as appropriate (April 1, 1959 memo by Linus A. Zink, ACMD Operations to Manager, VA Center, Togus).

In explaining this policy, J.S. Gleason, Jr., the VA Administrator remarked that the VA believed that Veterans "should make use of National cemeteries now available, or private cemeteries if preferred by relatives of deceased veterans" (March 23, 1961 letter from J.S. Gleason, Jr., VA Administrator to Senator Edmund S. Muskie).

The passage of the National Cemeteries Act of 1973 (P.L. 93-43) authorized the transfer of 82 National Cemeteries to the VA. In addition, the VA was made responsible for the acquisition of government headstones for veterans' graves. When the official transfer took place on September 1, 1973, the VA elevated its 21 NHDVS cemeteries, including both the West and East cemeteries at Togus, to the status of national

cemeteries.

Perhaps as a result of the VA's new responsibilities, as well as the elevation of the West Cemetery to National Cemetery status, at least three sets of maps were prepared of the cemetery. The first set, from 1975, was prepared by Engineers Incorporated of Vermont with the work resulting in a series of eight sheets, although only sheets 2-8 deal with the West Cemetery (sheets 1-2 are of the East Cemetery). These plans show an "interior survey" that apparently included the stones, the vegetation, roads, and other features. Of special interest, these plans document the cannon ball clusters that were present at the Soldier's Monument. In addition, all of the roads were gravel.

In 1977 the VA prepared a series of six sheets that documented grave locations, dimensions, and whether there were available graves. It appears that, in general, the early 1975 maps had been used for these newer drawings. Trees were shown, many were numbered, but there was no listing of the individual trees or species.

In 1979 a Landscape Plan was prepared by the VA. Of the seven sheets that were part of this plan set, five are associated with West Cemetery. These plans reveal new plants to be added, plants to be moved, and some plantings to be removed.

In 2010 the VA contracted with Consigli Construction of Portland, Maine to conduct repairs of the 1889 Soldier's Monument at the cemetery. The monument was disassembled and rebuilt on a better foundation. During the process a time capsule from 1889 was discovered. One of the more intriguing items were the signatures of seven members who presumably were responsible for the original construction: Fred J. Mansfield, Joseph B. Swift, James Finn, Stephan H. Hoadly, William Ratigan, Robert H. Black, and Michael McCarty ("Monument at Togus Reveals 1889 Treasure", *Morning Sentinel*, September 16, 2010). All were identified in the Togus rolls except Michael McCarty. Of the six identified, two are buried in the cemetery, Joseph B. Swift (d. September 29, 1914 and buried in grave 3248) and Robert H. Black (d. April 26, 1914 and buried in grave 3204). Mansfield died at St. Elizabeths (in the District of Columbia) in November 1899, Finn was discharged at his own request in 1891, Rattigan was dropped from the rolls in 1891, and Hoadley was dishonorably discharged in 1892 for "repeated drunkenness, absence awol & constantly visiting a notorious brothel in defiance of the Governor's orders."

The East Cemetery

As previously explained, the East Cemetery was opened in 1902 and used in conjunction with the West Cemetery through 1907. Although we have found no good evidence to explain which cemetery was chosen for any particular burial, it seems likely that, given the problems with water in the East Cemetery, the West Cemetery was used when the water levels were too high to permit burial in the new, East Cemetery.

Smith (1998:37) claims that the cemetery was closed in order to order "to drain a high-water table and institute a new sanitation system." We have not found collaborative evidence, but the East Cemetery was again used beginning in 1936 (it is incorrectly reported by Edgington and his colleagues that the East Cemetery began in 1936 [Edgington et al. 2011:35]).

A 1941 plan of the cemetery, prepared as WPA Project 665-11-3-77, shows only three sections (M, N, and O) with the Celtic Cross monument about 140 feet to the north and off center. The only inscription is "Let Them Rest in Peace" and we have not determined when this monument was added to the cemetery. The cemetery is set in the middle of a pasture and a creek running along the eastern edge of the cemetery helps explain why the graves were commonly flooded. At the time of the map, Section O had not been filled and the southeast quadrant had not yet had any burials.

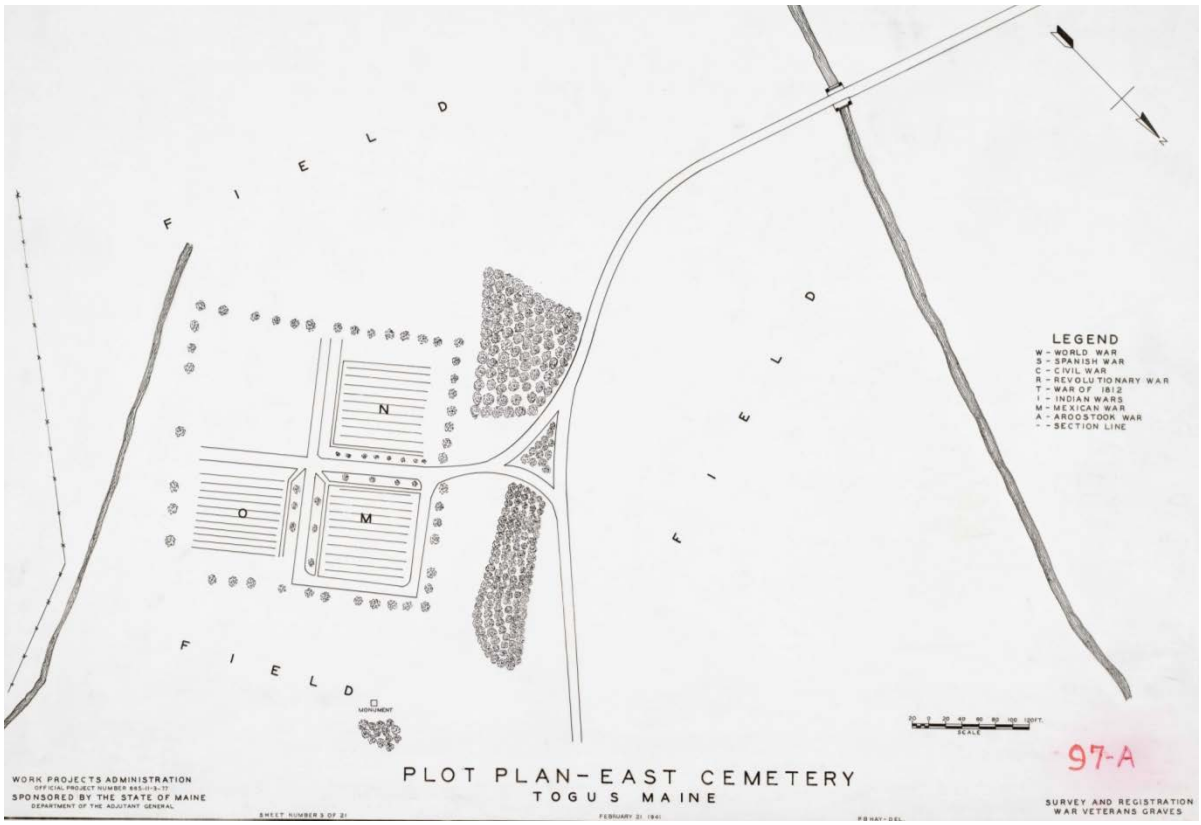


Figure 36. East Cemetery in 1941 (WPA Official Project No. 665-11-3-77).

During the late 1940s plans were developed for the expansion of this cemetery. This work included reorganization of the road network and expansion of sections to the southeast. The work also involved the removal of the Celtic Cross and using it as a focal point in the center of the cemetery. Figure 37 shows these plans.

Although many aspects of these plans were never completed, in 1949 the Garden Club Federation of Maine began the Lilac Living Memorial at Togus – a planting of a living hedge of 2,000 purple and white lilacs around the cemetery, directed by Mrs. Edward F. Merrill. Behind the lilacs were planted white pines as a contrasting backdrop (http://www.mainegardenclubs.org/History_of_GCFM.html, accessed November 14, 2011). By May 27, 1955 a memo from M.L. Stoddard, the VA Manager, to the Engineer Officer noted that some of the lilacs had died and directed that the Engineer obtain replacements from Mrs. Merrill. A follow-up memo of June 20, 1955 reveals that 235 replacements were needed. It is not clear whether the replacements were provided, although by July 12, 1957 the maintenance of the hedge was assumed by Togus. At some point this early landscaping must have been largely removed as little evidence of it remains today.

With the October 24, 1958 decision not to expand any of the cemeteries on VA properties, space at the East Cemetery was quickly depleted. By December 2, 1960 the Chief of the Engineering Division recommended that "routine burials cease" in the cemetery as of June 30, 1961. This recommendation was approved by J.S. Weltman, the VA Manager on December 5, 1960 and Togus officials began notifying various veterans' groups and hospitals in the region.

The last burial in the cemetery apparently took place on June 30, 1961 with the interment of Frank Clarence May ("Lone Woman Interred at

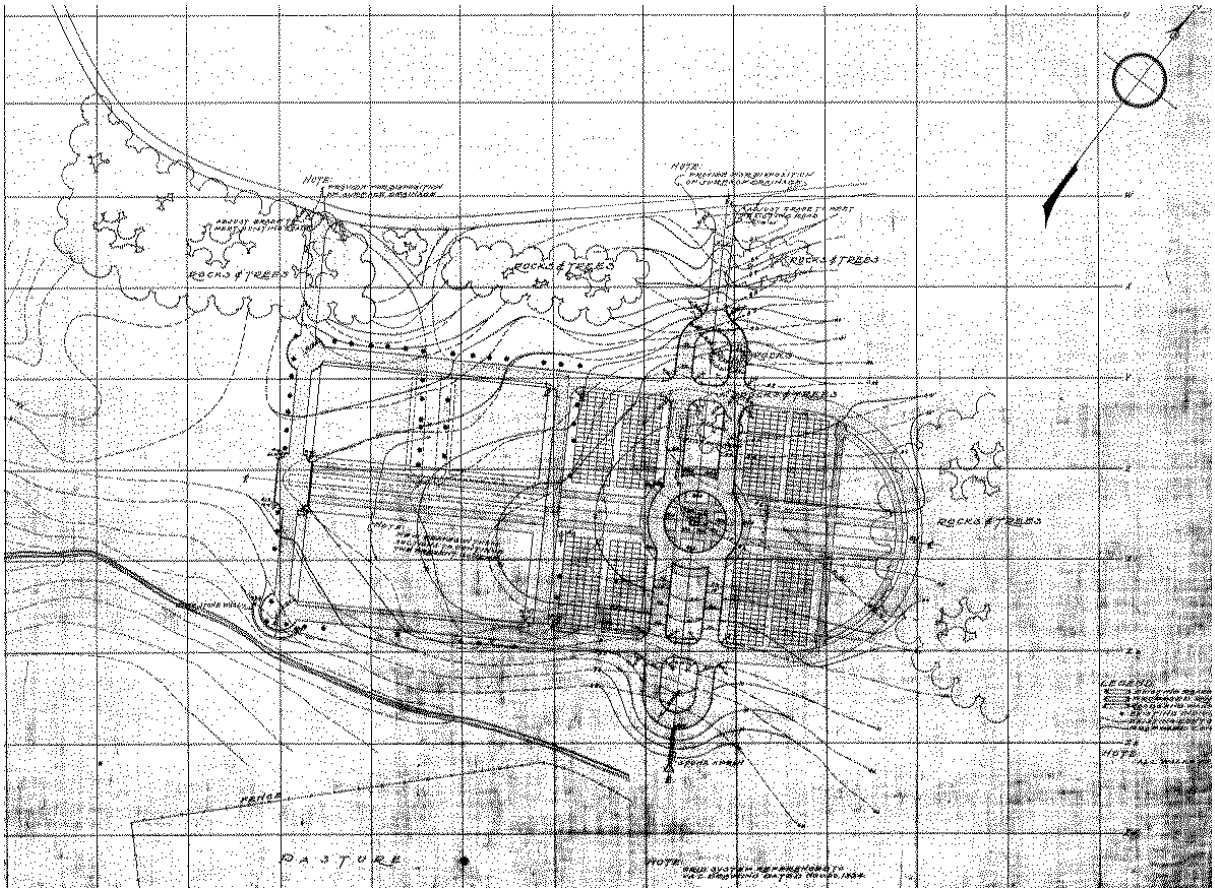


Figure 37. Plans for the redevelopment of the East Cemetery prepared during the late 1940s.

Togus," *Lewiston Journal Magazine*, May 25, 1963).

Also in the early 1960s the iron Gettysburg Address tablet that is featured prominently at virtually all national cemeteries was erected in Eastern Cemetery. These tablets were produced at the Army's Rock Island Arsenal, Illinois beginning in 1909 (http://www.cem.va.gov/hist/lincbic.asp, accessed November 18, 2011). The one at East Cemetery was originally installed on the NHDVS library wall. When the structure was demolished the plaque was moved to a warehouse and forgotten ("Lone Woman Interred at Togus," *Lewiston Journal Magazine*, May 25, 1963).

By the mid-1960s the main access road, still in use today, had been paved. This road, however, continued around and entered the VA property further east. That portion of the road was left as dirt and was described as a "deeply rutted and gouged gravel road" that documented the "many a sad funeral cortege" ("Lone Woman Interred at Togus," *Lewiston Journal Magazine*, May 25, 1963).

In spite of the efforts this cemetery continued to have drainage issues and by 2008-2009 extensive work was undertaken to improve drainage and resolve at least some of the problems (Edgington et al. 2011:35).

Monuments and Other Features

This section, as part of the assessment task, will very briefly comment on the current condition and long-term needs associated with the two monuments in West Cemetery, as well as other features of note. We have not reviewed treatment reports for those monuments having received treatment recently, so these discussions will only describe current conditions and make observations regarding treatment issues.

Soldiers and Sailors Monument

As previously discussed, this monument was originally constructed using locally quarried granite by NHDVS members. It was constructed in 1889 and completed in 1890. In 2010 the monument was taken apart and rebuilt with improvements to the foundation. Today the

Figure 38. Soldier's Monument after treatments, oblique views to the north and south.

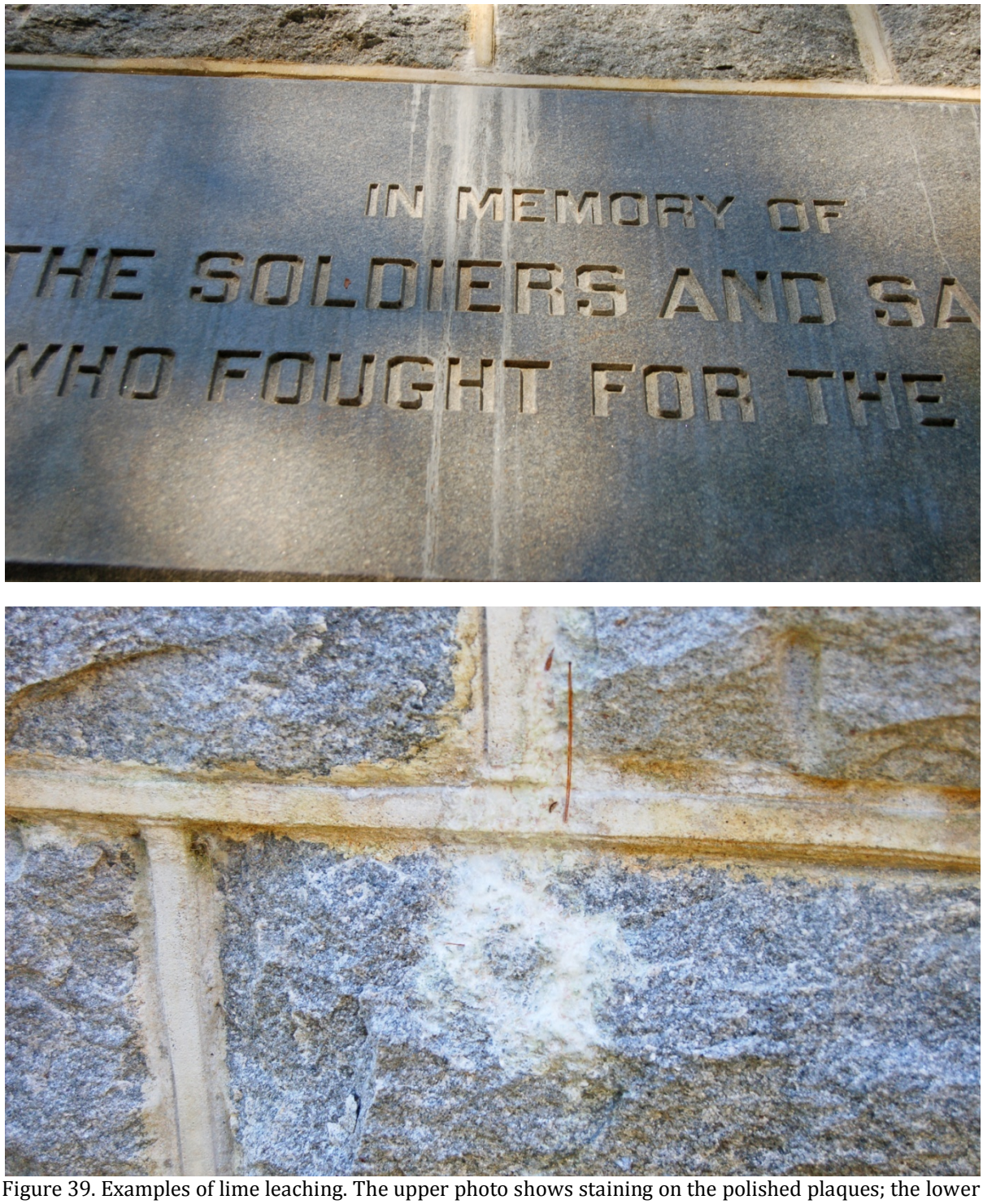


Figure 39. Examples of lime leaching. The upper photo shows staining on the polished plaques; the lower figure shows lime accumulations where water is actively removing lime from the mortar.

monument sits at the far north-northeastern edge of the cemetery, between Sections C and C-Extension. The monument today sits on a two tiered earthen platform, although neither cannonballs nor mortars are present. The platform is also more gradually tiered than what is shown in various photographs (compare, for example, Figure 38 with Figures 22, 24, and 27).

A number of weep holes have been installed in the monument to provide drainage for water that enters the monument core. Water intrusion was apparently a significant issue in the failure of the original monument.

Several issues warrant attention. The first is that the relatively shaded location of the monument tends to promote biological growth. We recommend that the VA initiate a yearly program of cleaning the monument with a quaternary ammonium biocide such as Cathedral Stone's D/2 or Prosoco's BioWash. In either case the monument should be thoroughly prewetted, the cleaner applied undiluted and allowed to dwell for 15-20 minutes, and then entirely rinsed off. Scrubbing using soft bristle brushes is useful during the dwell period. The pressure of the water applied to the monument should not exceed 90 psi.

The second issue observed is that there are numerous areas where lime is being leached from the mortar in a process that is often called "lime weeping." Calcium hydroxide is being picked up in solution from the lime in the mortar and transported to the surface. There the solution evaporates and leaves behind deposits of solid white calcium hydroxide. This in turn reacts with atmospheric carbon dioxide to form white deposits of calcite or calcium carbonate.

Generally, the significance of this issue depends on how much lime is being removed from the mortar. The VA may wish to consult with those previously involved in the monument repair for additional advice on this issue.


Figure 40. Salt deposits forming along the mortar joint.

Removal of lime deposits is typically done using an acid to dissolve the encrustation. Granite is an acid resistant stone and a product such as MasonRE Efflorescence Remover is typically quite effective. Such acid products, however, should not be used on polished granite since they will etch the stone, removing the polish. On the polished granite weak solutions of white vinegar may remove the lime without noticeably affecting the polish. The issue, of course, is whether these deposits will return and the amount of free lime that is being leached from the mortar.

The final issue we observed is the presence of small amounts of salt deposits that appear to be associated with the mortar joints. This is distinct from the lime issue and is the result of soluble salts being dissolved in the masonry units and then being deposited on their surface as the moisture evaporates.

Figure 41. Spanish-American War Monument, looking west and east.

EM Quant test strips failed to identify detectable levels of sulfate, nitrate, or chloride salts. The small amounts of salts are therefore not considered a significant issue at this time.

Spanish-American War Monument

This concrete monument was constructed in 1916 for a very nominal amount, suggesting that, like the Soldiers and Sailors Monument, all of the work was done at the Home. It has been reported that the monument suffers from what is known as Alkali-Silica Reaction or ASR. Originally documented in the late 1930s in California highway projects, research since then has revealed that this form of deterioration occurs as a result of a reaction between the OH^- ions and reactive (amorphous) silica. The released silica combines with alkalis (Na^+ and K^+) from the cement to form ASR gel. This gel absorbs water and swells, resulting in tensile forces that crack the concrete. For ASR to be a problem there must be a reactive form of silica present in the concrete, alkalis, and moisture.

While ASR provides readily visible indicators, it can be verified through scanning electron microscopy (SEM) and petrographic or thin section examination. These, however, require the extraction of a core and are often not considered appropriate for historic structures. Unfortunately, non-destructive testing (such as ultrasonic pulse velocity testing or crack mapping) tends to be costly and/or provide low reliability.

Common treatments typically fall into two categories: either treating the symptoms or treating the causes. Techniques that treat the symptoms include filling visible cracks (improving aesthetics and reducing salt uptakes), strengthening and stabilizing, and providing stress relief. One technique that focuses on treating the cause includes the application of silane coatings in order to minimize the water intrusion that promotes swelling, often combined with filling cracks. Another treatment that is showing promise is the application of lithium nitrate, as a topical application, under vacuum impregnation, or using an electrochemical application.

Recent studies suggest that of the different treatment options, silane coatings combined with filling cracks promotes structural integrity, increases durability, is an effective

Figure 42. Coating failure on the Spanish-American War monument. The lower photo shows one of several cracks currently visible on the monument.

repair technique, and is generally cost affordable.

Those focusing on ASR research consistently recommend beginning mitigation measures as quickly as possible (to minimize the level of damage). They also emphasize the importance of resisting the "demolish and rebuild" impulse that often dominated the thinking of past decades.

The VA has wisely resisted this "demolish and rebuild" temptation. Treatment, however, seems to have been limited to the application of what appears to be a silicate mineral paint. This treatment, however, is failing on both horizontal and vertical surfaces. Cracks are present in several areas, although it is not known if these are pre-existing cracks that were not filled or new cracks.

Minimally it is critical that the surface coating on the monument be maintained on a more regular basis. In addition, some consideration should be given to a more aggressive treatment of this monument to ensure its long-term preservation. This would involve the infilling of existing cracks and application of a silane coating specifically designed for concrete structures.

During this assessment we also noticed that that the marble plaque on the south elevation had been reattached using low carbon zinc washers and nickel plated steel cap nuts. These have a low resistance to corrosion and Figure 43 shows that some corrosion is already taking place. The cap nut was not removed, but it seems likely that the bolt itself may also be a zinc or chrome plated steel and also inclined to corrode over time. These attachments should be removed and replaced with minimally 304 stainless steel (Figure 43).

Figure 43. Inappropriate connectors used on the Spanish-American War monument.

Granite Vault

At the eastern edge of the cemetery, built into a birm at the edge of a pathway, is a semi-subterranean vault of granite construction. The vault faces east and is constructed of ashlar stone topped with a pediment on which a construction date of "1868" is inscribed. The vault is built into or incorporates a dry laid stone wall that probably surrounded the cemetery at one time. An iron door (incorrectly identified as bronze by Edgington et al. 2011:35) measuring 2'8" in width and 5' in height provides access. This door is in good condition, having been freshly painted at the time of this visit. It is secured by a VA padlock.

The interior of the vault measures 9' in width by 15'2" in length. Interior walls are approximately 10½" in thickness. The ceiling is 6'4" and consists of 10 granite panels varying from 7" to 1'8" in width laid across the short dimension of the vault. The door is not centered on the interior vault wall, but measures 3'8" from the north wall and 2'6" from the south wall. This of course is not noticeable from the exterior.

There are a series of holes in the side walls of the vault, 2' and 3'9" above the floor grade. These were likely intended to support some sort of shelving to hold caskets.

A cast iron pipe provides ventilation to the vault and is in good condition.

The interior of the vault today has a concrete floor. When this was installed is not known, but it was probably not original.

Today the vault is used to store a large number of cast iron flag holders. These flag holders can be seen in a number of historic photographs (see, for example, Figures 23, 30, 32, and 33) and were used at least through the 1940s. Also present in the vault are two concrete Section L markers, as well as five Row 1 markers and one blank row marker. The row markers measure 4 by 4" square and are 1'6" in length.

The granite used for the construction of the vault is a bluish gray (Munsell 5PB 6/1 and 5PB 5/1) and is fine grained. It is likely local and, like that of the Soldiers and Sailors Monument, may have been quarried on the property.

A single Rilem Test No. 11.4 (water absorption under low pressure - pipe method) was conducted on the granite to the left of the entrance. During the study the temperature was 55°F, the relative humidity was 70%, and the winds less than 10 mph. The sky was overcast. In general, acceptable performance is achieved if the level of water drops no more than 20% of the original height during the first 20 minutes (i.e., from the 0 to the 1 ml mark). The granite shows very low permeability, with only a 1% drop.

The vault has had the mortar joints repaired on at least two occasions, with the recent pointing exhibiting strikingly poor workmanship. Areas that appear original have beaded joints. The

Figure 44. Granite vault at West Cemetery. The upper photo shows the vault looking west; note how the vault is tied into a dry laid stone wall at the right (north). The lower left photo shows the interior construction, looking at the northwest corner. One of two stacks of flag holders are shown along the north wall. The lower right photo shows the interior construction at the door on the east wall.

original mortar is a light gray (Munsell N7) and the mortar contains abundant sub-rounded medium sand. The inclusions include primarily white, clear, and brown sand, although some black inclusions and some mica are present. Some interior breaks reveal a much finer medium gray

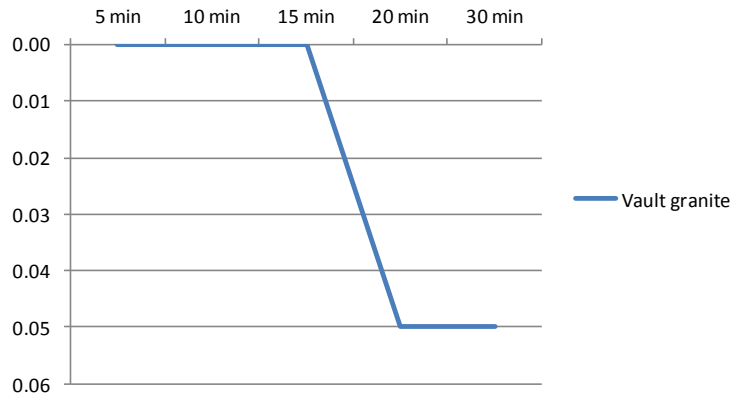


Figure 45. Rilem tube test results for the vault granite.

(Munsell N5) paste. The mortar is extremely hard.

Although Portland cement had been gaining in popularity in Europe since 1850, it was not manufactured in the United States until the 1870s, a few years after the 1868 construction date of the vault. This suggests the mortar was not Portland cement, but natural cement, which had been used in United States since the late eighteenth century and was widely used by the military in the construction of seacoast defenses. Its presence at a National Home with strong ties to the military is, therefore, not surprising.

Natural cement is hydraulic cement made from limestone that has a high clay content (argillaceous limestone). It is different from air lime, which is made from limestone with a lower clay content, in that lime is not hydraulic. In contrast, Portland cement is made from artificial mixtures of limestone, shale, gypsum and other additives. It is also heated to a higher temperature. Natural cement is a dicalcic silicate, while Portland cement is a combination of dicalcic and tricalcic silicates and tricalcium aluminate.

This information is pertinent since we recommend that the VA submit a sample of the mortar to a laboratory capable of providing for wet chemical, petrographic, X-ray fluorescence spectroscopy (XRF), and thermal analysis in order to replicate an appropriate paste for future repairs.

Some repair efforts have been devoted to the vault since 2002 when stones at the right edge were missing (Anonymous 2002:1-29-8). This repair, like others evident on the vault, exhibits poor workshop that fails to meet the Secretary of Interior Standards.

Future repairs should focus on the removal of the inappropriate recent repointing using Portland cement and appropriate pointing to match the original mortar in color, texture, and

Figure 46. View of the dry laid stone wall. It ties into the vault on the left; note the displacement and shifting. Note also the sod growing over the wall.

Figure 47. Inappropriate repairs on the vault. The upper two photos show inappropriate repointing. Note the sloppy application and failure to match the original mortar in color, texture, or joint finish. The lower photo shows original mortar joints with some cracked and missing mortar.

tooling. These repairs should be given a high priority.

Of equal importance, however, is the need to repair the dry laid stone wall where it ties into the existing tomb. For a distance of approximately 6-10 feet the wall is bowed outward with stones being displaced. This damage is almost certainly the result of soil pressure behind the wall since its construction over 150 years ago.

The VA is currently discussing removing the wall, constructing a concrete retaining wall and then rebuilding the dry stone wall. This is likely over engineered and more costly than necessary.

Dry stone walls have many benefits over mortared walls. They rely on the forces of gravity and frictional resistance for long-term maintenance. The absence of mortar provides slight flexibility that allows them to conform to foundation settling without damage. Dry stone walls are sloped slightly inward so ground movement locks the structure more tightly together. No concrete footing is needed, saving labor and material costs.

Dry stone walls do rely on the skill of the craftsman. We strongly recommend that the VA contract with the Dry Stone Conservancy for the rebuilding of this wall. Recently the Conservancy formed a cooperative agreement with the National Park Service for the repair of dry stone walls at the Weir Farm National Historic Site with the work also providing building skills to NPS staff. The VA

could productively form a similar partnership that would ensure the appropriate rebuilding of this wall. There is at least one Certified Master Drystone Craftsman in Maine (http://www.drystone.org/).

Figure 48. Vault about 2002 before recent repairs to the right façade. Compare to Figure 44.

Most critical is that the wall be repaired using appropriate dry stone walling techniques and that as little of the original fabric be disturbed as possible.

Soil Analysis

Soil is legitimately viewed as primarily affecting the plants or landscape in a cemetery. Nevertheless, soil chemistry – and the fertilizers and other adjuvants that are frequently added – can dramatically affect the preservation of stones and other monuments. These discussions will review several soil tests and how the findings may affect the long-term preservation of the stones at the West Cemetery.

Soil Tests

Three soil samples were obtained reflecting different areas and soil conditions. Soil from Section B reflects a relatively low and poorly drained portion of the cemetery, as does soil from Section E, although the two cemetery sections are about 700 feet distant from one another. Soil from Section H reflects a higher and better drained setting. Soils in this area are also typical of those found in association with the early tab in socket stones used to mark graves.

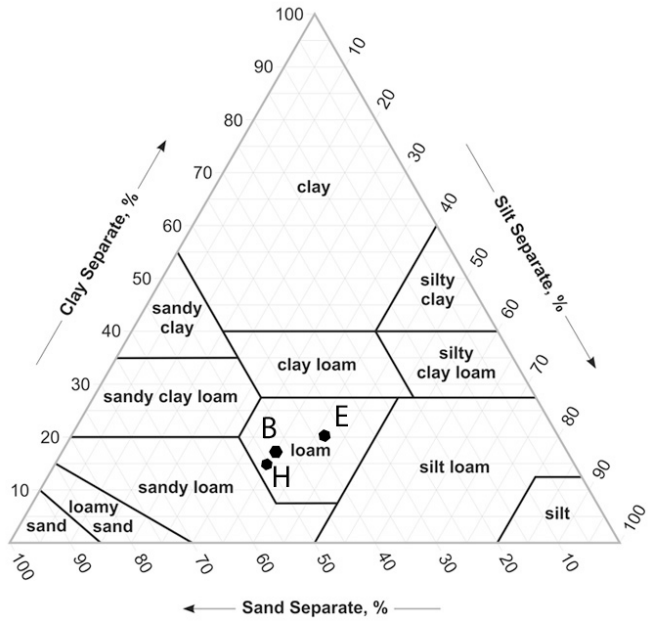


Figure 49. Soil texture triangle showing the classification of the three samples from West Cemetery.

In spite of the different topographic settings, Figure 49 reveals that all of the samples possess a very similar texture and all would be classified as loams.

In addition, all three samples were also tested for CO_2-Burst 24-hour Biomass. The soils from Sections E and H have 64 ad 67 ppm CO_2-C and fall into the range of ideal biological activity and soil organic matter content. The soil from Section B, on the higher elevation, has 36 ppm CO_2-C and is classified as exhibiting moderate biomass. The soils in this area could benefit from additional stable organic matter, although the work would result in only a marginal quality increase.

Results of macro and micronutrient analysis for the three samples are shown in Figure 50. The soil pH for all three areas is acidic, between 4.5 and 5.0. Most grasses desire a pH of 6.0. In addition, this pH can cause noticeable damage to marble in a relatively short period. The acidic nature of the soil is reflected in the very low – almost nonexistent – calcium levels.

Nitrate levels for Sections E and H are quite low; the nitrate level for Section B is optimal. Nitrate, the available form of nitrogen, is transient, being readily lost from soil through rainfall or spring runoff. As a result it is typically not sampled and these levels should be carefully interpreted.

In contrast, the levels of phosphorus and potassium are far more stable. The potassium levels in Sections B and H are near optimal, but

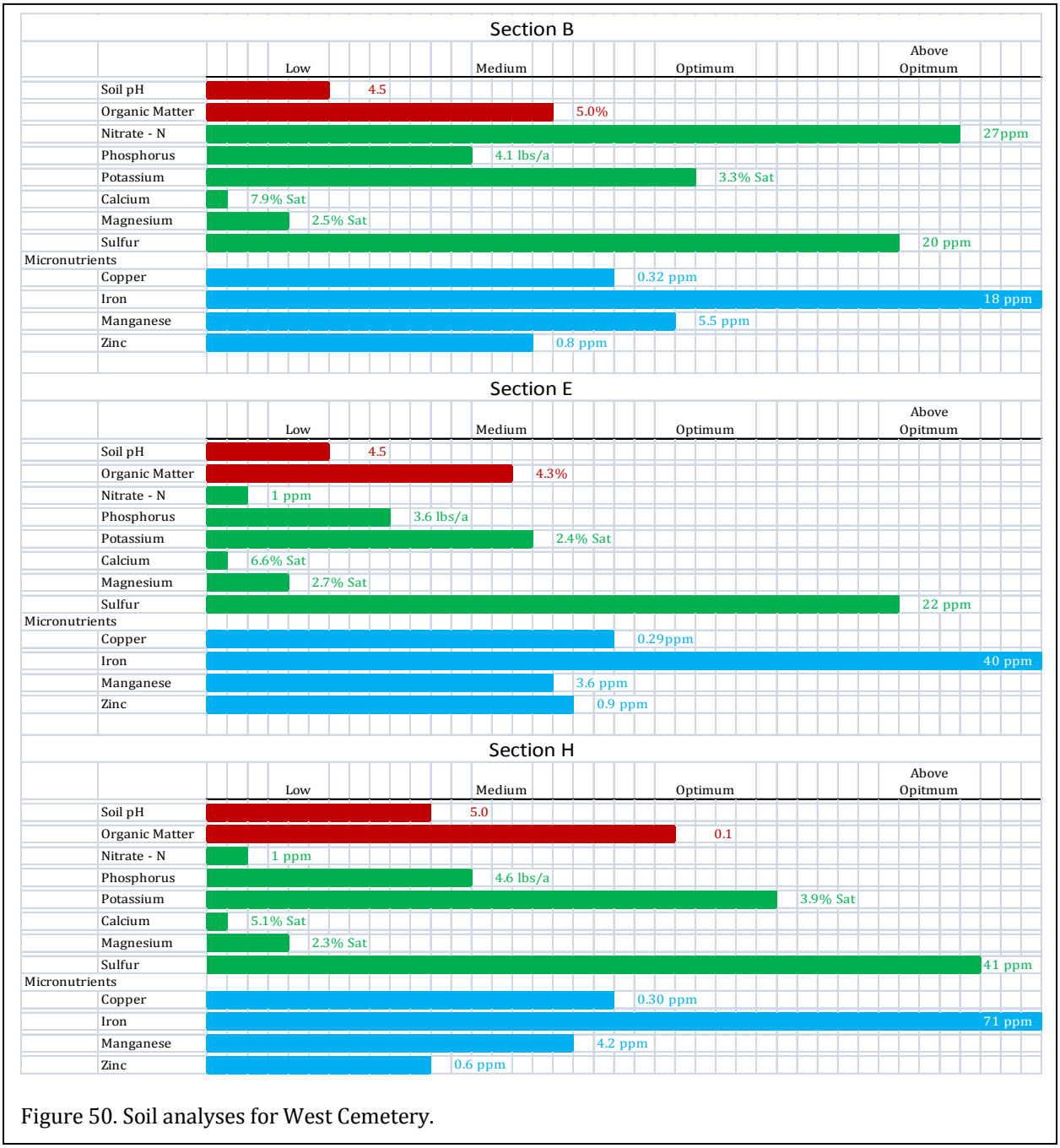


Figure 50. Soil analyses for West Cemetery.

slightly low in Section E. Phosphorus levels are somewhat low in all three sections.

Magnesium levels are low in all three samples, but the levels may be affected by low pH levels. Magnesium is the central element of the chlorophyll molecule and therefore critical for plant photosynthesis.

Sulfur levels are optimal to above optimal. The cause for the high levels in Section H is unknown. Sulfur toxicity, however, is uncommon.

The cation exchange capacity (CEC) of the

soils ranges from 6.4 to 8.9. These are reasonably good levels.

The micronutrient levels in all three samples are very similar. Iron is found in very high levels. This may be the result of the low pH since as soil pH drops it sometimes will create an excess of available iron.

Recommendations to improve the soil include the application of lime to raise the soil pH to 6.0. In all cases lime topdressing should be limited to no more than 100 pounds per 1,000 square feet per year. To assist in developing the magnesium levels in the soils it is recommended that a magnesium lime be used.

For Section B, lime should be added at the rate of 170 lbs. per 1,000 square feet. For Section E, the recommendation is 180 lbs. per 1,000 square feet. For Section H, it is recommended that 130 lbs. of lime be applied per 1,000 square feet. Thus, it is likely that all areas of the cemetery would benefit for an initial application of 100 lbs. per 1,000 square feet, followed by additional testing and a second round of liming thereafter.

Fertilization recommendations (assuming that clippings are left on the soil) for Section B are 2.5 lbs. of 20-4-8 per 1,000 square feet in late August. The recommendation for Section E is 8.5 pounds of 12-4-8 per 1,000 square feet. The recommendation for Section H is 2.5 lbs. of 20-4-8 per 1,000 square feet.

In order to minimize salt uptake by the stones, slow release organic fertilizers are preferable to commercial inorganic fertilizers. An excellent source explaining the differences between organic and inorganic fertilizers is http://www.cmg.colostate.edu/gardennotes/234.pdf. The publication at http://www.caes.uga.edu/applications/publications/files/pdf/C%20853_3.PDF provides information on converting traditional inorganic fertilizer recommendations to safer organic recipes.

For example, 2.5 lbs. of blood meal per 1,000 square feet will provide the recommended nitrogen levels for Sections B and H. The P_2O_5 levels for these two sections can be met by using 1.0 lb. of steamed bone meal. Sulfate of Potash Magnesia will meet the K_2O demand at a rate of 1 lb. per 1000 square feet.

A final test examined the soluble salts present in the soils. This test was conducted by examining the electrical conductivity of the soil (in units of millimhos per centimeter or mmhos/cm). The levels are very low for each of the three test areas (0.40, 0.19, and 0.14, respectively).

Implications

From the standpoint of agronomy, West Cemetery is typical of ignored soils. The soil pH is low and requires heavy lime applications to achieve a level suitable for most turfgrass.

The low pH levels (or high acidity levels) are causing damage to marble stone where it has been exposed to the soil for prolonged periods of time. This is clearly seen in Figure 51, where soil has been allowed to accumulate around the marble die set in the granite sockets. The soil, in combination with abusive maintenance practices (such as the use of nylon trimmers), has caused a significant reduction in the thickness of the marble.

Soil nutrients are also low, although not as low as many cemeteries we have evaluated.

What is critical is that fertilization of the West Cemetery use only organic fertilizers that have low salt indices. For example, while ammonium nitrate has a salt index of 105, dried blood has a salt index of only 3.5. Maintaining low salt indices is not only good for the soil, but it is of critical importance to the stones.

It is equally critical that herbicides not be used in the West Cemetery since they, too, contribute significant loads of soluble salts to the soils.

Figure 51. Example of damage caused to a marble stone by burial in acidic soils.

Stones will draw up soluble salts through capillary movement. As the moisture evaporates the salts are left behind. These soluble salts cause spalling and cracking of stone.

The soil tests reveal that there are very low levels of soluble salts in the West Cemetery soils today. This is good since it means that other factors being equal, the stones in the West Cemetery should not be suffering from salt uptake.

Marble Analysis

A primary conservation focus of this study involves the earliest marble stones erected primarily in Sections D and H (see Figure 7 for an example). These represent early and unique historic fabric and deserve particular care.

Of particular interest was the development of a physical and chemical characterization of the stone in these sections in an effort to determine the source of the stone. We also desired information on the weatherability and long-term performance of this marble.

Figure 52. Samples submitted for analysis.

This work was conducted by Mineralogy, Inc. of Tulsa, Oklahoma and was coordinated by Ceramic Tile and Stone Consultants, Inc. of Jamul, California.

The samples for this study came from the socket of a granite base found discarded in the woods. We felt it was more appropriate to use damaged stone than to core a still standing monument in the cemetery. Two samples, both from the same socket, were supplied in order that a quality control duplicate was available if needed. Both samples came from the same stone and were visually identical. They were very fine grained and pure white (Munsell N9). Where the stone had been exposed, it had taken on a slight yellowish cast (note the right specimen in Figure 52 below).

There were no obvious veins or inclusions in the sample, although veins are found in the stones themselves. These veins tend to be slightly green when damp.

The stone and thin section were returned and subsequently forwarded to the VA for permanent retention.

X-Ray Diffraction

X-ray diffraction (XRD) is a non-destructive technique that reveals detailed information about the chemical composition and crystallographic structure of materials. It is one of the primary techniques used by mineralogists to examine the physico-chemical make-up of unknown solids (or confirm findings from other mineralogical studies). The XRD technique takes a sample of the material and places the powdered sample in a holder, then the sample is illuminated with x-rays of a fixed wave-length and the intensity of the reflected radiation is recorded using a goniometer. This data is then analyzed to identify possible matches; thus far about 50,000 inorganic materials are

available for comparison. XRD has the advantage of actually identifying the minerals present, although estimation of the amounts present is semiquantitative.

The results of the analysis are shown in Table 1. The mineralogy is dominated by calcite (99%) with minor amounts of dolomite (1%) and traces of quartz and illite/mica are the other crystalline phases detected.

Table 1.
X-Ray Diffraction Results, Sample 11555-01

Mineral Constituents	Chemical Formula	Relative Abundance (%)
Quartz	SiO_2	Trace
Calcite	$CaCO_3$	99
Dolomite	$(Ca,Mg)(CO_3)_2$	1
Illite/Mica	$KAl_2(Si_3AlO_{10})(OH)_2$	trace

X-Ray Fluorescence

X-ray fluorescence (XRF) is used for routine, relatively non-destructive chemical analyses. It works on wavelength-dispersive spectroscopic principles that are similar to an electron microprobe (EPMA). However, an XRF cannot generally make analyses at the small spot sizes typical of EPMA work (2-5 microns), so it is typically used for bulk analyses of larger fractions of geological materials. It is also superior to older wet-chemical or atomic absorption since it is more rapid and requires less training. A good introduction is provided by La Tour in his paper, "Analysis of Rocks Using X-Ray Fluorescence Spectrometry" (http://www2.gsu.edu/~geotel/rigaku.pdf).

The results of the XRF analysis are summarized in Table 2. The data indicate a chemistry that is consistent with the mineralogical findings, with major elements that include calcium (CaO = 56.6%), silicon (SiO_2 = 0.43%), magnesium (MgO = 0.31%), aluminum (Al_2O_3 = 0.23%), iron (FeO = 0.06%), and potassium (K_20 = 0.06%). Strontium (173 ppm), lead (32 ppm), and tungsten (18 ppm) are present as trace elements.

Thin Section Petrographic Analysis

Petrographic analysis is essentially the examination of a material using light (or optical) microscopy. Samples are typically cut and ground to produce a thin section that can be examined using a polarizing microscope capable to magnifications up to x600; thin sections may be examined in pane-polarized or cross-polarized transmitted light. A good introduction to the process is Ingham (2011).

This work provided an evaluation of texture, fabric, mineralogy, and pore system properties of the sample. Figure 53 provides a photo mosaic of representative images.

The sample is a medium crystalline marble. It exhibits a tightly interlocked mosaic dominated by anhedral crystals admixed with scattered crystals of dolomite and quartz silt and sand grains. The mean crystal diameter of the calcite is ~0.17 mm, while the maximum crystal diameter is 0.90 mm.

The sample exhibits a medium crystalline, anhedral, tightly interlocked metamorphic fabric. The calcite crystals exhibit a granular framework with a relatively uniform distribution of crystal sizes and an absence of preferred fabric orientation. The marble is calcite-rich & largely mono-mineralic, with only minor to trace amounts of dolomite, quartz and illite identified in the x-ray diffraction mineralogical analysis for this stone sample. The intercrystalline sutures are commonly well-defined in the thin section and appear as light to medium gray boundaries that locally contain trace amounts of intercrystalline microporosity as well as drapes of illite-rich clay. Minor amounts of dolomite are present (~1%) as a localized replacement for calcite. The dolomite crystals are typically isolated and randomly distributed within the plane of the thin section. Quartz silt and sand grains are also irregularly distributed in the marble framework. The quartz crystals locally exhibit evidence of

Table 2.
X-Ray Fluorescence Analysis, Sample 11555-01

Elemental Phase	Chemical Formula	Relative Abundance (%) 11555-01	11555-01R
Sodium	Na_2O	<0.05	<0.05
Magnesium	MgO	0.31	0.31
Aluminum	Al_2O_3	0.23	0.23
Phosphorous	P_2O_5	<0.05	<0.05
Sulfur	S	<0.05	<0.05
Chlorine	Cl	<0.02	<0.02
Potassium	K_2O	0.06	0.06
Calcium	CaO	56.5	56.5
Titanium	TiO_2	<0.01	<0.01
Magnesium	MnO	<0.01	<0.01
Iron	Fe_2O_3	0.06	0.06
Barium	BaO	<0.01	<0.01

Trace Element	Chemical Formula	Relative Abundance (ppm) 11555-01	11555-01R
Vanadium	V	<10	<10
Chromium	Cr	<10	<10
Cobalt	Co	<10	<10
Nickel	Ni	<10	<10
Tungsten	W	18	16
Copper	Cu	<10	<10
Zinc	Zn	<10	<10
Arsenic	As	<20	<20
Tin	Sn	<50	<50
Lead	Pb	32	33
Molybdenum	Mo	<10	<10
Strontium	Sr	173	179
Uranium	U	<20	<20
Thorium	Th	<20	<20
Niobium	Nb	<10	<10
Zirconium	Zr	<10	<10
Rubidium	Rb	<10	<10
Yttrium	Y	<10	<10

11555-01R = quality control duplicate

re-crystallization and a few contain fluid inclusions. The texturally and mineralogically homogenous character of this marble specimen contribute to its durability.

The petrographic mineralogical analysis reveals that medium crystalline calcite accounts for ~ 98.5 +% of the composition. Minor to trace amounts of dolomite, quartz and illite are present as irregularly distributed constituents. The dolomite is 'iron-free' and probably formed as an authigenic replacement for calcite that crystallized prior to metamorphism. The quartz occurs as subrounded and locally re-crystallized detrital grains that were incorporated within the parent limestone. The illite clay is estimated to account for <0.5% of the stone mass, occurring as irregular traces of clay minerals that are preferentially concentrated along the intercrystalline sutures of the marble.

The pore system of this marble sample is comprised of trace amounts of intercrystalline microporosity. The intercrystalline voids are minute (generally < 1 μm) and limited to localized sutures separating individual calcite crystals. The microporosity is visually estimated to comprise <0.1% of the bulk volume within this marble specimen.

Source

The bulk of the white marbles in the United States come from three locations (Price 2007:68-69). The region around Talladega County, Alabama produces a calcitic marble of Paleozoic age that is generally white, cream, gray, or veined. Quarrying began in the 1830s, taking off in the early 1900s.

Colorado Yule marble is a fine grained calcitic marble that is particularly pure. Veined varieties contain quartz and amphibole minerals. Quarrying began in the late 1870s with sporadic quarrying since.

Finally, Danby marble comes from western Vermont and is an Ordovician fine-grained calcitic marble with veins of iron ore and silicate impurities. Commercial quarrying began in the late 1700s and continues today.

A review of geological and historical documents related to marble quarrying in northern New England (specifically Vermont, Maine, Massachusetts, and Connecticut) suggests that Vermont is the most likely source for the marble identified in this analysis.

A 1913 report from the Vermont State Geologist provides a chemical analysis for a typical "white calcite marble from West Rutland, VT" that closely resembles the XRF data set (Dale

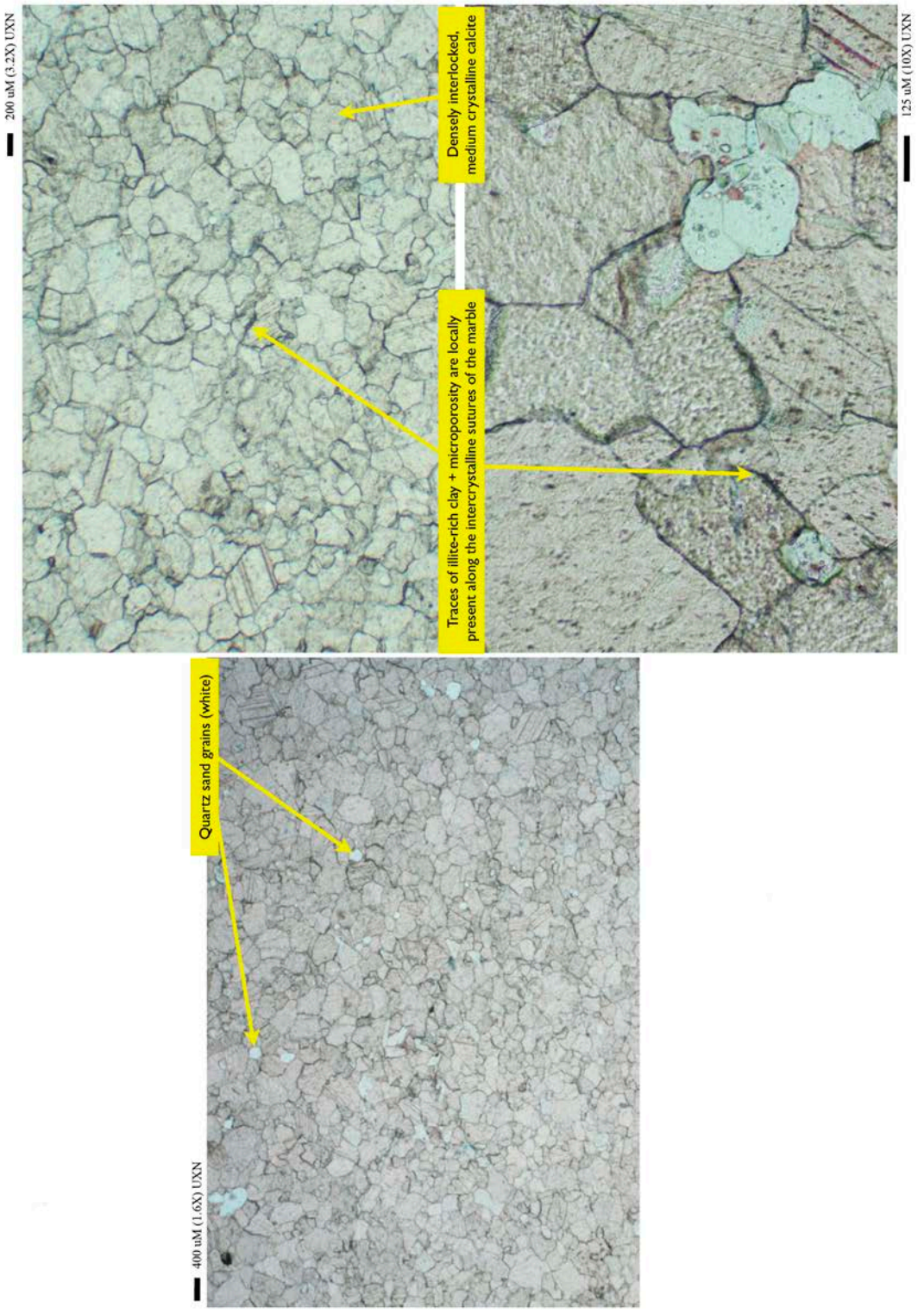


Figure 53. Petrographic thin sections from the early marble stones in the West Cemetery.

1914). The EarthChem portal yields additional analyses from the Vermont area (http://www.earthchemportal.org/quickresults.php?pkey=87207&usgs=true).

A year later Perkins observed that, "nearly all of the finished marble of Vermont is controlled by the Vermont Marble Company and the Green Mountain Marble Company" (Perkins 1914:165). He goes on to note that the 75 quarries that "fed" the 25 mills were primarily in the area west of the Green Mountains, in Bennington, Rutland, and Addison counties. Virtually all of this marble had great chemical similarity, being calcite marble with only occasional interbedding of small lenses of dolomite. In spite of the chemical uniformity, there was a tremendous range of colors and textures. The Vermont Marble Company boasted that it could provide "nearly fifth different varieties of marble" (Perkins 1914:167).

At least one historic analysis of Vermont marble was conducted. An 1897 analysis by W.C. Day with the U.S. Geological Service, identified that the calcium carbonate content of the stone was 99.15% (Day 1897).

We have been able to identify one petrographic study of known Vermont marble. The work, conducted by Dr. Allan S. Gilbert of Fordham University, reported by Slavid (1999). The sample was obtained from the Grant Memorial in Washington, D.C., known to have come from Vermont. The work revealed very high mineral purity, with the calcite content being "well over 99%" (Slavid 1999:9).

With the current information available it appears that the Togus sample best matches the chemical composition data for white marble from the Columbian member of the Shelburne formation. Active quarries were located in this area from the late 1860s through at least the late 1880s, corresponding with the period these stones were used.

Weatherability

The weatherability of this marble should be excellent considering its tightly interlocking crystalline structure and few voids. Given the microporosity of the stone, it would have to be subjected to very severe freezing (on freezing water expands by approximately one-tenth of its volume) to cause any significant spalling. This is confirmed by the general absence of spalling on the extant stones. This is consistent with the presentation by Schaffer (1932:48-51),

It is unlikely that the stone will exhibit any substantial migration of moisture or minerals. This has been previously suggested by the Rilem study that found the marble relatively impervious. The very minor amount of efflorescence observed macroscropically is likely cause by acid rain from chemicals derived at the surface of the marble. Acid rain may cause expansion of the surface micropores as the acid attacks the calcium carbonate, resulting in the precipitation.

The petrographic analysis noted that it is important to keep the stone isolated from the soil, prevent water from collecting near the stone, and ensuring that there is adequate drainage. All of these recommendations echo the findings of the soil studies that also suggested the acidic soils could be responsible for the erosion observed where the stone had been allowed to be covered by soil.

Accuracy Of The Boss Database

Introduction

The NCA uses what is known as the BOSS (Burial Operations Support System) electronic database to identify and track burials in its cemeteries. There is a detailed explanation of how this system tracks interments to ensure that all graves are correctly identified and marked online (http://www.cem.va.gov/cem/pdf/accountability.pdf). We assume that the BOSS database was developed by entering data from pre-existing burial lists, although we have not identified specific documentation regarding this issue.

With the 2010 discoveries of mismanagement at Arlington Cemetery there has been considerable concern regarding the reliability of interment documents. Recently the VA completed an internal audit of NCA cemeteries, finding problems with 123 gravesites, including eight cases in which people were buried in the wrong gravesite ("VA Discovers Errors Affecting 123 Gravesites," *Air Force Times*, January 24, 2012). Put in perspective, this represents an error rate of one in about every 10,000 burials (0.01%). While we understand the concerns, this is a very low rate.

Just as historic cemeteries face different maintenance and conservation issues, they face very different questions regarding the accuracy of burial data. The current project collected data from each of the 3,802 stones in the West Cemetery, compared the transcribed data to the photograph of the stone, and then entered the data into a comprehensive Excel database. This work will make it possible to compare the BOSS database to what is actually present in the cemetery. This will provide an opportunity to evaluate the accuracy of the BOSS database, at least at West Cemetery.

Evaluation of A Sample

Initially the data from one section (A), comprising 375 individuals, was evaluated. As a result 38 errors were identified in BOSS. This represents an error rate of about 10%.

Some of the discrepancies were so minor that they are hardly worth noting. For example, stone 2392 identifies I.G. Purrington while BOSS lists the individual as Isaiah Purrington. This sort of difference would not preclude an individual from finding Purrington in the database and then locating his grave. If these minor differences are removed from consideration, the error rate drops to 9.3% (35 errors).

There are 10 entries in BOSS for individuals who do not exist in Section A. There are eight individuals in Section A that are not picked up by BOSS as existing in that section. There are an additional 17 individuals whose names are either significantly misspelled or reversed (John Smith becomes indexed as Smith John).

Section A was not randomly selected and it was unknown if these 365 comparisons were representative of the cemetery as a whole. Consequently, we undertook comparisons with three additional sections: Section D with 218 stones, Section G with 174 stones, and Section L with 355 stones. Taken together, these four sections examined 1,122 entries or 29.5% of the interment records. For this work we chose to ignore the minor discrepancies.

In Section D we found one name not on the BOSS list and one name on the BOSS list, but not in that section. There were five names repeated on the BOSS list. We identified 15 major misspellings (misspellings that would likely

prevent a layperson with no special genealogical training from finding the individual being looked for). There were an additional four minor misspellings (which likely would not have prevented an individual from being found). These 26 mistakes reflect an error rate of 11.9%.

Turning to Section G we found only one name repeated on the BOSS list and one name on the list for an individual not buried in that Section. There was also one name left off the BOSS list. In addition there were five significant misspellings and five minor misspellings. We also found one example of an incorrect number on the BOSS list (thus the individual would have been found on the list, but it would have been difficult to locate the individual's grave). Thus, the 14 discrepancies in Section G reflect an 8% error rate.

Section L represented the worst section examined. There we found seven names repeated on the BOSS list, six names on the BOSS list but not in the Section, and two names with incorrect numbers. There were 32 names of individuals in Section L that had been left off the BOSS list. In addition, there were 13 major misspellings that would likely have prevented an individual from being readily located and an additional seven misspellings that were considered relatively minor. In total, the Section L BOSS list contained 67 discrepancies, reflecting an 18.9% error rate.

Combined, there were 142 errors, representing an error rate of 12.8%.

Whether this error rate is acceptable is, of course, a decision for others to make – but these errors certainly affect the ability of descendants, genealogists, and researchers to find individuals buried in West Cemetery. As such they represent a failing in BOSS and call into question the usefulness of the system at historic cemeteries on a nationwide basis.

The bulk of these errors can be attributed to one of two major problems. The first is the reliance on typescript records. While "easy" to use these records have incorporated errors by clerk-typists who could not read the original handwriting. Thus "Blackmar" becomes "Blackman" and "Wass" becomes "Wars." The second problem, we believe, is simply carelessness in either reading the stone or the transcriptions and results in reversing first and last names or making other simple – but very difficult to correct – errors.

Accentuating the problem is that the search engine used for BOSS is not particularly robust. Some – but not all – of the problems could be overcome if a search engine similar to that used by companies such as Ancestry.com® were used. In this particular case the search engine names can be sought using phonetic matches, matches with similar meanings, and so forth.

Of course, even a more robust search engine will not be able to overcome all of the problems we encountered in this comparison. Ultimately, it may be necessary to have individuals with expertise read the stones and develop corrected lists as was done in this project. If that is done, we cannot overemphasize the usefulness of photographing the stones and comparing transcriptions to the stones as a quality control check. Whether under contract or volunteers, the individuals involved in this effort must have expertise in deciphering difficult to read stones.

Where original documentation exists – such as that for NHDVS cemeteries – it is equally important that it be incorporated into the effort. Many problems came to light only as we compared stones to original registration documents. Of particular note, a number of individuals buried in West Cemetery entered the Home using various aliases. Some were rather simple and really reflect no more than variations of a particular name, perhaps resulting from limited literacy. Others, however, were very dissimilar and would cause an individual to be lost in the burial records were that name not also indexed.

As important as it is to use these original documents, it is equally important to avoid the use of typescript documents whenever possible. These insert too many errors into the historical record and should be considered for use only as a last resort.

The Stones and Their Condition

Introduction

This work identified 3,802 stones in the West Cemetery; these are itemized by section in Table 3.

The majority of these stones (74.2%, 2,823) are what we have identified as "A" stones or the Civil War type with a recessed shield. The next most common are the very early Home-style stone ("C") used at Togus, accounting for 706 stones (18.6%). The general issue stones ("D") are relatively uncommon, accounting for only 146 examples (3.8%). Surprisingly, replacement shield stones ("B") using only a shield outline account for 3.3% (124) of the stones in West Cemetery. This seems to represent a very high proportion of replacements, although we don't have specific comparison data.

Table 3.
Stones by Section in West Cemetery

Section	Rows	Stones
A	16	365
B	16	451
C	8	292
C-extension	1	20
D	8	218
E	8	297
F	8	289
G	5	174
H	3	98
I	8	276
J	8	404
K	12	352
L	12	355
P	9	211

There are only three stones in the cemetery that are commercial (i.e., non-military) monuments. These are all die on base styles and are found exclusively in Sections G and H.

A very large proportion of the West Cemetery stones – nearly two-thirds – have the grave number carved on the top of the stone (65.3% or 2,482). A relatively minor proportion have the grave number either added to the reverse of the stone (98 or 2.6%) or the front (92 or 2.4%). Nearly a third (1,130 or 29.7%) lack a number.

Condition Issues

The stone-by-stone assessment identified a broad range of issues, including broken stones, cracks, spalling, chipping, erosion, and stones that are loose in or on their base, appreciably tilted, or so sunk in the ground as to make it impossible to read their information.

Twenty-one stones (0.6% of the total) were identified as broken during the assessment, including two Civil War stones (A stones) and 19 of the earliest stones used at Togas (C stones).

There are 73 stones (1.9%) that exhibit cracks. This includes 33 Civil War stones (A stones) and 39 of the C stones.

Far more common are stones that exhibit spalling. A total of 446 (11.7%) were identified; most of these (414) are the Civil War shield stones. An additional 32 are C stones, the early stones used to mark the graves of Home members.

Erosion was very common, being found on 1,769 (46.5%) of the stones in West Cemetery. It appears that most of this erosion is the result of acid rain and wind erosion; some reset stones show clear lines of demarcation between the relatively smooth portion that had been below

grade and the rough, weathered portion that has been exposed to the elements. Although not all eroded surfaces are currently sugaring, many are.

While more of the Civil War shield stones (A stones) exhibit erosion (1,104 or 62.4%) than other style stones, they represent only 39.1% of the A stones in the cemetery. In contrast, 94.2% of the C stones (665), which are earlier and thinner, exhibit a weathered, eroded surface.

The most common problem identified was chipping, found on 2,693 stones (70.8%). Most of these are in a location that suggests damage resulting from maintenance activities, such as being impacted by mowing.

It appears that the problem has existed for a considerable time. For example, while only 14.5% of the shield replacement stones (B stones) exhibit chipping, 88.8% of the C stones exhibit this type of damage. Of course, these stones are smaller and thinner – and thus may be more susceptible to damage.

Regardless, this is a type of damage that is preventable and the NCA should be proactive in preventing additional damage to these resources.

There are 30 monuments – all C stones – identified as loose in their sockets. The bulk of these are loose because of damage to the lead caulk, discussed below.

A total of 486 monuments (12.8%) are identified as sunken. This was, admittedly, a subjective evaluation and we tended not to identify a military stone (i.e., those identified as A, B, or D stones) as sunken unless it was noticeable. This generally meant that the stone was so sunken that it had become difficult to read the full inscription. In contrast, we listed a C stone as sunken if the granite base was no longer visible. As might be imagined, we identified relatively few sunken military stones – only 86 A stones and 4 B stones. In contrast, we identified 396 C stones (56.1%).

Tilting was also subjective and specific angle of tilt was not measured. These are stones, however, that are noticeably out of plumb. A total of 375 stones (9.9%) were placed in this category. Most of these stones (127 or 62.9%) are A stones. However, 236 are C stones and they represent about a third of this particular stone type.

Soiling was also identified during the assessment, with 1,934 stones (50.9%) being placed in this category. Most of these (1,238 or 64.0%) are A stones. Over three-quarters (78.3% or 553) of the C stones and nearly the same proportion (71.9% or 105) of the D stones are classified as soiled.

There are a variety of "other" issues, primarily noted for the C stones. Nine of these stones exhibit an old repair; an additional six stones have been reset in ordinary Portland cement (OPC). Thirty-five of the stones exhibit loss of their lead caulk with replacement by an OPC grout. Additional stones have missing or damaged lead caulk.

Stone Measurements

This study also measured samples of the different stone types in West Cemetery. The collected information is provided below in Table 4.

The height measurements exhibit considerable variability. If only the modern government stones (B and D stones) are considered, then their height above grade ranges from 16 to 26" with an average of about 22". The older style stones (A stones) range from 13 to 31" with an average of about 21".

Table 4.
Stone Measurements (HxWxTh) in West Cemetery

Stone Type	Measured (% of type)	Average (in inches)	Range (in inches)
A stones	176 (6.2)	21.179x11.423x3.879	13-31x9.5-13.5x3-4.25
B stones	26 (20.9)	20.673x12.885x3.91	16-25x12-13x3.5-4
C stones	42 (5.9)	18.482x11.744x1.985	16-20x11-12.25x1.75-2.25
D stones	11 (7.5)	22.591x13x3.925	18-26x13x3.75-4

In general, historic (or A stones) should be set 20-22", while the modern stones are specified to be set 24-26" above grade (Don Murphy, personal communication 2009). Thus, on average, the A stones at West Cemetery are close to their specified height, while the modern stones have all been set very low. Perhaps the low height for these stones is because an effort has been made for the stones to blend with the older ones.

Of greater interest is the range in all of the widths and thicknesses, even among the more modern general issue (Type D) or carved shield (Type B) stones. For example, while the general issue stones are reported to measure 13 by 4", only the width was found standardized at West Cemetery. The thickness varies from 3¾ to 4".

Conservation Principals

It is essential that all conservation work at historic cemeteries be conducted by, or minimally overseen by, conservation professionals who subscribe to the AIC Code of Ethics and Standards of Practice.

In practical terms this means that all treatments should not only subscribe to the Secretary of Interior's Standards for Preservation, but should also follow good conservation practice. Critical issues in terms of conservation practice include:

- Respecting the original historic fabric, evidenced by retaining as much as possible;
- Selecting the gentlest and least invasive treatment methods possible;
- Ensuring that the proposed treatment will not impede future treatments;
- Determining that the proposed treatment is reasonable and appropriate;
- Recognizing that sometimes nonintervention is the best possible treatment; and
- Documenting all prospective and actual treatment activities.

This last issue may be of special importance. All conservators operate within a continuum of care and rarely will the treatment being provided be the last time the object receives conservation attention. Consequently, it is critical that all treatments be fully, thoroughly, and accurately documented.

Conservators are obligated, before any intervention, to fully document the current condition of an object. Following examination and before treatment, the conservator is responsible for preparing a plan that clearly describes the course of treatment being recommended. The plan should identify the objectives of treatment, alternative approaches, if feasible, and the potential risks. This is critical since the owner must be in a position to make an informed judgment. Once the treatment is complete, the conservator must provide the client with a detailed description of the techniques or procedures involved in the treatment, the materials used, the nature and extent of all alterations resulting from the treatment, as well as recommendations for future care.

It is this Code of Ethics, as well as the Standards of Practice, that distinguish conservators from restorers and other trades. Rarely will a mason, for example, no matter how well versed, provide the detailed documentation of a conservator. Thus it becomes difficult to ascertain if a proposed treatment is appropriate, what its risks may be, or afterwards exactly what was done.

Specific Conservation Issues for the West Cemetery

Previous Treatments

We found multiple "handyman" repairs to the earliest – and unquestionably most significant – stones in Sections C and D. Immediate steps should be taken to ensure that these early stones receive better treatment. During this assessment

Figure 54. Example of a poor repair to an early stone (H-2-375)

the current landscape maintenance contractor desired to begin repairing the broken stones. While well meaning and sincere, this contractor has neither the training nor experience to repair stones and the NCA should be very careful to prohibit non-conservators from making repairs to historic stones.

There are nine stones (1.3%) that have been broken and have been repaired either using simple epoxy repairs or inappropriate ferrous pins. Many of the stones with simple epoxy repairs have failed soon after since the epoxy cannot support the weight of the stone. Subsequent failures remove more of the stone and exacerbate the problem.

In several cases the problem has been magnified by the use of very short ferrous pins that are corroding and causing additional damage. Figure 54 shows one such stone that has failed.

These stones were originally set using lead rope. This is a very old method of stone setting in which lead wool or strips of lead were hammered into the socket against the stone with a blunt cold chisel. This served to hold the stone in place.

Over time this lead can deteriorate and in some cases may be lost. Sometimes it is attacked by rodents who use the soft metal to help wear down their incisors. As previously mentioned, we identified 33 stones with damage to their lead caulk. These stones will require appropriate resetting in the very near future.

While lead is rarely used for this purpose today (both because of its health threat and also because it fails to create a water-tight joint), it was a sacrificial technique that did not harm the stone.

At West Cemetery we observed 35 stones where the lead had been replaced with a cementitious grout. Unfortunately, this grout is too hard for the stone and provides no “give” should the stone be impacted. It is the equivalent of using a Portland cement to repair old walls.

An additional six C stones have been broken and have been reset in Portland cement. These reset stones apparently account for the bases found abandoned in the adjacent woods.

Two of the three commercial die on base stones in West Cemetery exhibit evidence of ferrous pins and iron jacking such as corrosion stains and developing cracks. In order to prevent significant damage, these stones require disassembly and replacement of the ferrous pins with either stainless steel or fiberglass dowels.

Figure 55. Lead used to set the original stones is shown in the upper photo. Note the gap that is allowing water to enter. The lower photo shows the use of a very hard grout to replace the lead. Not only is the grout too hard, but it has cracked. Two episodes of repair are visible.

Conservation Treatments of VA "Civil War" Stones

It may be standard NCA policy to replace damaged "Civil War" stones (also called Pre-World War I Era stones; identified in this study as A stones) and we have been told that a greater effort is being made to match replacement stones to the original fabric. In other words, while the NCA offers shield stones in widths of 10, 12, and 13" (all 3" thick), there are some in the West Cemetery that are under 10" in width and/or over 3" in thickness (for example, I-3-1766 measures 9½ by 4", J-8-1222 measures 9½ by 3¾"; see the previous discussion on stone measurements). To match these stones appropriately would require replacements that are cut with a tolerance of perhaps ±½" (typical marble cutting has a tolerance of ±¼" so this should not appreciably increase cost).

Most fundamentally, NCA policy should strive to maintain as much original historic fabric as possible. Replacement of historic stones should represent the policy of last resort to ensure that a grave remains marked. New stones, even precisely matched to the old in terms of size, will evidence differences in color, arrangement of lettering, even the background work of the shield (using a toothed chisel or hammer, see Figure 56). To achieve this we recommend that legible stones be repaired rather than replaced.

This assessment identified several examples of broken shield stones (see Figure 57). All should be repaired rather than being replaced.

Recommended Conservation Treatment for Broken Stones

All of the broken early stones or Civil War shield stones require immediate conservation intervention. Allowing them to remain broken increase the potential for additional damage and the loss of the stone. We offer here a general protocol for their treatment by a conservation professional.

Figure 56. Close-up of a "Civil War" shield stone (L-2-4066) showing the use of a toothed chisel or solid tooth bush hammer to flatten and texture the shield. Work like this is costly to reproduce today, but is essential to maintain the appearance of the original stone.

- Each buried stone must be carefully excavated and laid on supports to allow drying and access.

- All stones must be carefully cleaned and allowed to dry.

- Any failed epoxy repair material must be removed manually using chisels and fine rotary tools (e.g., Dremel® or Foredom®). This is critical for appropriate registration.

- Stone fragments must be matched, checking for registration, and ensuring a good fit. The locations proposed for pins should be marked with graphite or steatite pencil, avoiding edges, areas of cracks, or other weak areas.

- Holes must be drilled using a masonry drill and carbide tipped bits. Hole diameters must not be greater than ¼ to 1/3 the thickness of the stone. The depth must be sufficient to provide structural support, but minimize spalling or other failures.

- Holes must be cleaned using compressed air and then swabbed with acetone. Holes should be dried using compressed air.

- Fiberglass rods should be cut to fit each hole, allowing appropriate room for expansion and contraction of the rod. Fiberglass is preferred since it exhibits a tensile strength and expansion coefficient very similar to marble.

- All drilled holes will be dry fitted to ensure proper registration of the fragments.

- An appropriate hi-mod, moisture insensitive, thixotropic epoxy will be selected and mixed according to manufacturer's specifications. The epoxy will be inserted only in the drill holes and not on the broken surface.

- With the pins installed, registration should be checked and any necessary adjustments made. The stone should be clamped and 24-48 hours allowed for the epoxy to set and begin curing.

- With clamps removed, the stone should be reset, checking its alignment with others in the same row. Adjust for plumb and level.

- Infill areas of missing fabric using appropriate infill repair mortar. Color match if necessary. Microcracks may require the use of an injection grout.

As previously noted, there are some stones where ferrous pins have been used. These must be removed prior to appropriate repair. This

Figure 57. Examples of broken "Civil War" shield stones. These should be repaired by a conservator, not replaced.

will require the use of diamond core drills sized to remove as little of the stone fabric as possible. With the ferrous pins removed, the stone can be drilled for the installation of new fiberglass pins as described above.

Treatment of Spalling and Cracking

A number of the stones in West Cemetery exhibit either spalling (446 total, mostly A stones) or cracks (73 total, evenly distributed between A and C stones). The mechanisms resulting in these failures are not documented by this study, although some of the problems are likely inherent flaws. In addition, many of the spalls refer to damage to the face of A stones with the loss of letters. Many of these spalls may be attributed to mechanical damage, especially damage from mowers.

In the New England climate, open cracks promote additional damage as water enters and freezes. Treatment of the cracks will involve the use of injection grout to seal the crack in order to prevent water intrusion.

Suitable repair materials include the use of Jahn M30 #32 Microinjection Grout, various Edison Pump-X grouts, and the use of dispersed hydrated lime (DHL). All of these products have limitations. Jahn and Edison products, for example, are cementitious products; DHL is softer, but requires a top coating of a more durable product.

Spalls may be more difficult to treat and in some cases treatment may be unnecessary. It is not possible to replace broken or damaged lettering on A stones. In fact, generally no treatment is necessary as the stone remains readable. More conventional spalls related to flaws in the marble may also require no treatment, depending on the depth of the damage.

Where spalls do require attention they are often treated using techniques identical as those for cracks. It may, however, be necessary to

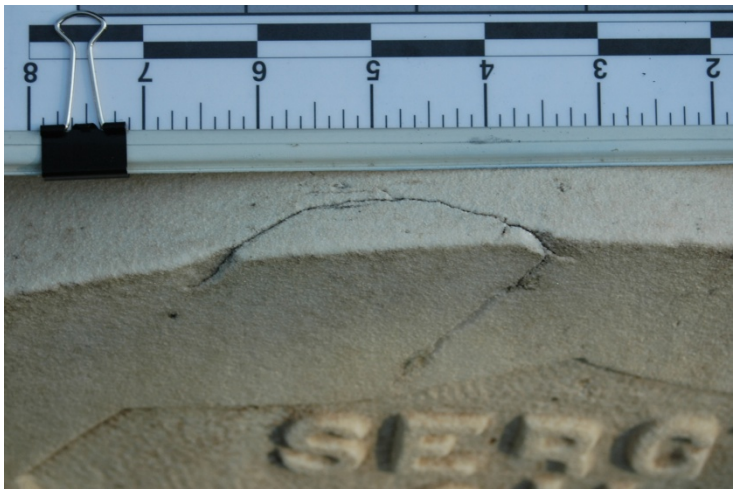


Figure 58. Crack and spalling damage.

drill injection ports to ensure that the grout reaches behind the still-intact stone spalls.

Erosion and Possible Treatment

A number of the stones exhibit erosion; some may be associated with acid rain and/or exposure to atmospheric pollutants. Some may be the result of the stone having been buried in acidic soil, while in other cases the erosion may be the result of wind-borne dust or sand. In some cases these eroded stones are sugaring, typically caused by the binder being dissolved or weakened through the intrusion of water.

In most cases the erosion is limited and we recommend no treatment at this time. Where sugaring is most dramatic on the C stones, some consideration should be given to consolidation.

Most of the current work with consolidants in this country focuses on ethyl silicate formulations (typically marketed by ProSoCo, Inc. as Conservare OH and H). They were first used in the mid-1980s and today are suggested for a range of products, including sandstone and marble.

Unfortunately, the results obtained with these products on sandstones have not been equaled for carbonate materials such as marble. In fact, research by Elizabeth Goins, George Wheeler, and Sandra Fleming suggest that marbles are anti-catalytic to the formation of silicate polymers from ethyl silicate monomer. It appears that ethyl silicate treatments are most often successful when the stone contains a quantity of non-carbonate secondary minerals (e.g., silicates). This suggests that the use of ethyl silicate consolidants will not be particularly effective on the C stones, since our analysis of a sample revealed the stone to have a very high calcite content and only a trace of silicates.

A more prudent consolidation approach would be the use of the ProSoCo product HCT. This product is based on the formation of a well-adhered conversion layer, by chemical

Figure 59. Eroded stones in West Cemetery. Upper stone shows badly eroded C stone. The lower photo shows erosion on the upper half of the D stone where it has been exposed. Note that the lower half of the stone, which until recently was below grade, exhibits less erosion.

reaction, on the carbonate mineral surfaces. Intergrowth of the conversion layer at points of grain contact results in some consolidating effect and the new layer is relatively acid-resistant. Since it is hydroxyl-functional, it provides for the attachment of ethyl silicate consolidates, if the choice is made for their use.

HCT, however, may also be used as a stand-alone product, providing protection against acid rain and weathering, as well as some degree of consolidation. Moreover, it is water-based and can be used without VOC restrictions, which is a consideration for use in Maine where VOCs are limited to 350g/liter. In contrast, OH-100 is listed as having VOCs of >400g/l, exceeding the Maine limit.

West Cemetery provides an excellent opportunity for NCA to test the effectiveness of HCT for prolonging the effective life of these early monuments. Consideration should also be given to the use of HCT on A stones since they, too, represent critical historic fabric at the cemetery.

Resetting of the Old Markers at West Cemetery

Fabrication

There were questions regarding how the original markers in Sections C and D, used prior to Congress approving the original government stones, had been fabricated. This study examined those bases that had been discarded in the woods beside the cemetery (as well as one set beside one of the structures on the hospital campus). In addition, several stones were excavated to ensure that those discarded were not somehow different.

We found that all of the monuments consisted of a granite base with a carved socket into which the marble die had been set originally using lead.

The granite bases exhibit considerable variability in length, width, and depth. Depths range from 3½ to 6½", lengths range from 1'5" to 1'6½", and widths range from 1' to 1'1". While the visible size of the bases was standardized ±1", representing normal quarrying practices, the depth of the bases was far more variable. As long as the base was sufficient to support the stone it was probably accepted.

This variation, however, will create the need for any support system to provide suitable adjustablility within a rather wide range. Adjustments in height, especially, will be needed.

Condition

The overall condition of the oldest markers in Sections C and D is quite good. The chemical and petrographic analysis reveals that the marble is fine grained and has a tightly interlocking crystalline structure with few (and small) voids. The Rilem tube study confirms that the marble absorbs only small quantities of water. All of these characteristics produce a marble that is easy to carve and, if treated correctly, can have a very long life.

The problems observed at the cemetery fall into two categories – and both are related specifically to their treatment by caregivers.

The first problem is that of mechanical damage. This includes improper mower use (with

Figure 60. Granite bases. Upper photos show bases discarded in the woods. The lower left photo shows a base next to a building on the hospital campus. The lower right photo shows one of several excavated stones being measured.

stone impacts), the use of trimmer line that is too heavy (with cuts and scrapes to the stone), and too aggressive cleaning (such as the use of pressure washers). There are likely other issues, perhaps including previous cleaning using bleach products, such as Daybreak.

The second problem is that of allowing soil to build up around the granite base and cover the marble. This has resulted in erosion and damages the stone immediately above the granite socket, producing a zone of weakness. It is in this area that stones have failed. It is also in this area that we see inappropriate repairs.

Another issue worthy of mention is that many of these early stones do exhibit some minor sugaring with resulting erosion. This is particularly noticeable on the upper surface where numbers had been carved. These are frequently very worn and difficult to read as a result of acid rain affecting the marble.

Treatment Recommendations

While resetting these monuments is recommended, both to re-establish the original appearance of these sections, as well as to minimize further mechanical and chemical damage to the stones, we are not convinced that any more sophisticated support mechanism is necessary. The granite sockets will distribute the weight of the stone and although some future resetting may be necessary, it doesn't seem likely that the problem will be dramatic. Moreover, any support mechanism, as previously discussed, will need to have the ability for considerable adjustments given the variation in the size of the sockets.

Resetting itself will require a level of effort that may be above that typically specified on an NCA project. For example, all work will need to be done by hand, avoiding the use of any clamping or mechanical equipment. It is also of utmost importance that the stones are handled *only* by their granite bases. Moving the stones by their marble dies may result in the stone snapping. While this damage can be repaired, it would be far better to avoid the need for repair by careful handling.

Although the work need not be done by conservators, we recommend that a conservator be on-site to oversee and direct the resetting process. During this oversight the broken stones identified in this assessment can be repaired as previously discussed.

The issue of sugaring is more difficult to address. We recommend that the "C" stones and many of the "A" stones be treated with ProSoCo HCT and further evaluated to determine the long-term impact of this treatment.

Findings and Recommendations

Accuracy of the Existing BOSS Database

We examined four sections of the West Cemetery, comparing transcriptions and photographs of the stones to the BOSS electronic database. We found a variety of discrepancies between BOSS and what is actually present in the cemetery. Problems included BOSS reporting burials in a section that were not present, burials in a particular section not reported by BOSS, and errors in spelling that would have made it difficult, perhaps impossible, for most researchers to actually locate the sought burials. The identified error rates varied from a low of 8% to a high of 18.9%. The 142 errors identified in these four sections represent an error rate of 12.8%.

Just the four sections at West Cemetery exceeded the nationwide identification of 123 problems recently revealed by an NCA internal audit. Although these errors are certainly less significant than burials in the wrong gravesite, it becomes no less problematic if correct burial locations cannot be readily identified or individuals known to be buried cannot be found in the index.

If this error rate is mirrored at other NCA cemeteries, this indicates that hundreds, possibly thousands, of burials cannot be readily located. We anticipate that the problems are most prevalent at historic cemeteries where the original records are hand written.

We suggest that the most direct means of correcting this situation – and the most likely to be cost-effective in the long-run – is simply to have individuals with expertise read the stones and develop corrected lists as was done in this project. We cannot overemphasize the usefulness of photographing the stones and comparing transcriptions to the stones as a quality control check. Nor can we overemphasize the importance of integrating historic documentation at early, historic cemeteries to ensure that every possible source is being examined. This research has demonstrated the futility of using typescripts prepared from the original handwritten documents.

Resetting of the Old Markers at West Cemetery

The NCA wishes to improve the overall appearance of West Cemetery and it is being proposed that a program be developed to achieve this goal. It is, however, of critical importance to understand that the stones found primarily in Sections C and D represent an early marker, predating the decision by Congress to extend the use of government issued markers to the Homes.

This study incorporated petrographic and chemical analysis of the stone, finding it to be a very fine grained white marble, probably from Vermont. The study reveals that the stones, while eroded, would not be suitable candidates for treatment with ProSoCo's OH consolidants because of the stone's abundant calcite. The stones would be suitable for treatment with HCT and we recommend that a pilot study be conducted to determine if such a treatment would assist in the long-term preservation of these stones.

We found that the resetting of these stones so that the granite socket was slightly above grade would help protect the marble from the damaging effects of soil acidity, as well as damage from use of nylon trimmers.

While we recommend that the stones be

reset, we noted that the work requires very careful attention to detail and should be conducted, or minimally overseen, by a trained conservator.

In addition, any effort to create some support mechanism for the stones will need to allow vertical adjustments by as much as 6 inches, and horizontal adjustments of 1-2 inches. Although the marble headstones are cut within relatively standard tolerances, the granite sockets show considerable variability, especially in their depth.

A support mechanism may represent over-engineering. It may be possible to reset these stones using decomposed granite sand and achieve very stable long-term results.

Conservation Treatments

Previous Treatments

The West Cemetery has received conservation treatment of both the Soldiers and Sailors Monument, which was entirely rebuilt to correct foundation concerns, and the Spanish American War monument, which was showing indications of alkali–silica reaction (ASR). In addition, some repairs have been conducted on the granite vault. Finally, we found multiple "handyman" repairs to the earliest – and unquestionably most significant – stones in Sections C and D.

Each of these repairs has been discussed at some length in the body of the report and each has issues that require attention. The Soldiers and Sailors Monument exhibits lime weeping, the coating is failing on the Spanish American War Monument, and the granite vault has been very poorly repointed with inappropriate mortar.

Recommended Stone Treatments

The earliest stones exhibit a range of conservation issues, including breaks, previous ineffective repairs using epoxy and ferrous pins, resetting in Portland cement, and loss of lead caulk. We recommend that these stones receive immediate conservation treatments beyond resetting briefly mentioned above.

Stones with inappropriate repairs should be taken apart, ferrous pins core drilled out and replaced with fiberglass pins, old epoxy adhesive carefully removed and the stones drilled for the use of blind pinning, inappropriate setting materials removed where it is possible to do so and appropriately reset with either lead or a high lime mortar, and failing lead joints removed and replaced either with lead or high lime mortar.

All work should be conducted by a trained stone conservator who subscribes to the AIC Code of Ethics and Standards of Practice. NCA should ensure that stone repairs are not conducted by landscaping contractors.

NCA policy should strive to maintain as much original historic fabric as possible, extending conservation treatment to the Civil War shield stones. Replacement of historic stones should represent the policy of last resort to ensure that a grave remains marked. New stones, even precisely matched to the old in terms of size, will evidence differences in color, arrangement of lettering, even the background work of the shield. To achieve this it is critically important for legible, historic stones to be repaired rather than replaced.

Recommended Treatment of the Granite Vault

The granite vault has received multiple episodes of very poor repairs. Very hard mortars that fail to match the original work in color, texture, or tooling have been used on at least two occasions.

This inappropriate work must be removed. This will likely be best accomplished by using a ⅛-inch thick 4-inch diameter diamond blade to center cut the existing bed joints (it cannot be used on vertical head joints). The center cut allows the mortar to be more easily removed by carefully using a five-in-one or chisel and hammer.

We recommend that the historic mortar be submitted for petrographic testing with the goal of not only matching the texture and color, but also determining the nature of this original mortar. Given the association with the military, we suspect that this mortar may be a natural cement, but this requires additional testing.

A suitable mortar – matching in color and texture – should be selected. Options may include a natural cement mortar, NHL 5 mortar, or possibly a lime mortar. We suspect, however, that petrographic testing will reveal that the original mortar is not based on air lime. The cleaned joints should be repointed and finished using an appropriate ribbon jointer.

Recommended Treatment of the Granite Vault Wall

Portions of the granite vault wall are in failure. Unlike the vault, which is laid up in mortar, this wall was dry laid and it is essential that its repair maintain this original style.

Dry laid walls rely on gravity and frictional forces – not mortar. As such they are remarkably resilient and easily repaired. There is a tendency to over-engineer repair of historic dry laid retaining walls, typically because there has been little effort to validate structural design methods. Although it can be argued that the original dry-laid wall stood for over 100 years and that using traditional techniques should be sufficient to rebuild the wall, this approach can be difficult to justify. Recent work has examined dry laid wall stability using homogenization and yield design theory (Colas et al. 2007).

Studies demonstrate that the strength of a dry-stone wall is a function of the properties and interaction of the blocks making up the wall face. Thus, walls formed from squared, slab-like blocks of stone are more stable than ones formed of less regular and more random stonework. As a result, the vault retaining wall, with a range of rock shapes, is less stable than the vault wall. Studies have also shown that the traditional methods of stone walling have sound engineering functions.

In particular, critical elements include placing the largest blocks at the base with their shortest dimension in the vertical plane, inclining joints toward the back, inserting through stones to improve stability by limiting crack lengths, and ensuring that stones interlock in a three dimensional structure. Research also suggests that water pressure behind walls is a significant failure mechanism (Brady and Kavanagh 2002).

In 1996 NCPTT funded the production of a training video on dry stone walling that provides an excellent overview, useful to both engineers and conservators. **We recommend that a structural engineer with expertise in historic preservation and dry stone walling be consulted.** An excellent source to help guide the NCA is the Dry Stone Conservancy (http://www.drystone.org/).

The National Shrine Concept

In 1973, Congress legislated that veterans' cemeteries would be "considered national shrines as a tribute to our gallant dead" (Public Law 93-43, Section 24). By 1999, Congress passed further legislation (Public Law 106-117, Section 613) that required the VA's National Cemetery Administration (NCA) to conduct a study to examine the finest cemeteries across the United States and the world. This study, known as the "The National Shrine Commitment," was intended to ensure that the VA cemeteries could be ranked as the "finest in the world." Congress used phrases such as "place of honor," "majestic setting," and "beautiful and awe-inspiring tribute."

In 2002 the National Cemetery Administration established operational standards to provide guidance and quantifiable goals for maintaining national cemeteries as national shrines at both open (defined as "open for first casketed interment") and closed (all other) national cemeteries (Anonymous 2002:3:2-2). It is suggested that "historic" "Civil War era" cemeteries continue to be visited by the "curious and the reflective long after people with close ties to the dead have ceased to come," recognizing that Americans tend to have a relatively short period of memorialization (Anonymous 2002:3:3-39).

The review of the West Cemetery (Anonymous 2002:2:1-29-10 – 1-29-15) identified a variety of repair projects. Several are worthy of brief discussion in the context of this study.

- The grave markers in the cemetery are recommended for removal, allowing the soil to be tilled to a depth of 4 inches, have additional topsoil added, the grounds leveled and compacted.

- All of the grave markers are recommended for resetting in sharp gravel.

- All of the grave markers are recommended for cleaning using a 50% dilution of sodium hypochlorite.

- Approximately 25 trees are recommended for removal, with 30 3-inch caliper replacement trees added to the landscape.

- Restoration of the two monuments at the West Cemetery was recommended.

- The study recommended that stone on the vault be repaired or replaced and the joints "tuck-pointed."

At the most basic level these recommendations have great validity. Grave markers are misaligned, trees are in declining health, and the vault does need attention. The recommendations, however, fail to provide useful *specific* means of achieving the goals. They also fail to provide advice on how goals can be safely accomplished, recognizing that the cemetery is eligible for listing on the National Register of Historic Places.

Some of the recommendations are contrary to the Secretary of Interior's Standards for Preservation (Table 5). The use of chlorine bleach, for example, is not the gentlest means possible. In addition, the restoration recommendations fail to ensure (or at least fail to specify) that new materials and work match the old in composition, design, color, and texture.

While such problems could presumably be resolved through judicious specifications, this assumes – but does not guarantee – the involvement of preservationists and conservators. Moreover, in some cases there is a presumption underlying the recommendations that is difficult to reconcile with the historic context of the cemetery.

It appears that the shrine concept presumes that all cemeteries are essentially the same and can have essentially uniform specifications developed. This is the de facto conclusion of "The National Shrine Commitment" study, which states, "a single set of appearance standards, which all NCA cemeteries can apply, is feasible" (Anonymous 2002:3:4-1). We found only a brief mention of the "special consideration" that historic cemeteries require, although the conclusion was that, "the possible dimensions of any such consideration are not yet clear" (Anonymous 2002:3:D-3). We hope these discussions will more clearly define those needs.

In reality, historic cemeteries often have features that preclude the rote implementation of "operational standards." Moreover, "closed" cemeteries should not be construed as the same as "historic" (i.e., eligible for or listed on the National Register) cemeteries.

One example of this is the inability of historic cemeteries – or at least the West Cemetery at Togus – to have grave markers vertically, laterally, and transversely aligned with other graves in the process of resetting. The existing maps reveal and historic research suggests that original grave locations varied so much as to prevent such realignments today.

Any effort to achieve such alignments today would potentially serve to disassociate the grave marker from the actual grave. This is an issue with which the NCA has already had some experience and it would certainly devalue the National Shrine Concept and engender poor public relations.

In addition, such efforts would dramatically change the historic landscape, giving

the cemetery an appearance that it never had during its period of historic use and maintenance. The current arrangement of graves, reflecting how burials were placed historically, is a character-defining feature of the cemetery. As such, the level of realigning used in more modern cemeteries is inappropriate for historic cemeteries such as Togus West Cemetery.

It is important to understand that we do not dismiss the "National Shrine" concept. Rather, we believe that historic cemeteries have additional criteria – such as their National Register eligibility, the need to ensure compliance with the Secretary of Interior's Standards, and specific requirements for the treatment of the cultural landscape – *that must also be considered*.

In fact, many of the historic attributes such as the mature trees, the dappled shade, the circulation pattern, the topography, and the rock outcrops, are all part of what makes the West Cemetery a shrine. Changing these features in order to create a "modern cemetery appearance" would destroy what makes this property a National Shrine. It is important not to lose the character defining features in an effort to implement "operational standards."

We recommend that the NCA develop a distinct set of operational standards specific to historic properties and ensure that staff are trained in both identifying historic properties and implementing the appropriate standards.

Table 5.
Secretary of the Interior's Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

West Cemetery Operational Standards

Landscape Trees

One of the character defining features of West Cemetery is its mature trees. As Figure 25 reveals, some of the trees in this cemetery were planted by the soldiers at the Home. The importance of the landscape is clearly evident in the words of the Home's residents. Henry Spalding, for example, remarked in 1886 that the "trees bud and leaf as if by magic." He explains that the, "fields and hillsides covered with verdure and the back-ground of trees beautiful with foliage and musical with the song of birds and hum of animated nature" are integral to the well-being of the occupants (Spaulding 1886). Warren (1898) commented on the work of the gardeners to keep "the ground of the Home beautifully adorned in Summer with lovely flowers and shrubbery." She

also singled out the cemetery, noting that it was a "beautiful spot." Whitman (1879:70) described the cemetery as a "sylvan spot."

Review of the historic photographs document the abundant trees, both native and planted. The photos also document that grass was sporadic. Figure 23, for example, shows a large area that appears to be only soil. Figure 22 suggests that while grave mounds may have been planted, surrounding soil was bare. And while hand colored post cards showed thick green grass, the reality was far different (see Figure 27 for a comparison).

"The National Shrine Commitment" study also recognizes the importance of the trees in these Civil War cemeteries noting, "trees planted around and among the graves also provide relief from the starkness of regimented headstones, while affording a mellow play of light and shade in the burial areas" (Anonymous 2002:3:3-40).

Thus, the cemetery historically had a rustic appearance, dominated by trees with planted grave mounds. Grass was minimal, probably because prior to the introduction of power mowers in the 1920s, maintenance of such a large grassed area would have been difficult.

Since the 1970s there have been several episodes of tree removals, most recently only a year or so ago. There have been no corresponding efforts to replace lost trees to maintain the historic landscape.

The Secretary of the Interior's *Guidelines for the Treatment of Cultural Landscapes* acknowledges that there will be change in historic landscapes. It is nevertheless critical that this dynamic nature be counterbalanced by the continuity of distinctive characteristics.

Existing trees must be retained and preserved. This can be accomplished by stabilizing the existing vegetation. At the West Cemetery this would include having the existing trees evaluated by an ISA Certified Arborist, undertaking appropriating pruning, fertilizing as necessary, cabling limbs that might be threatened, and protecting below ground root systems.

The National Center for Preservation Technology and Training (NCPTT) has offered a workshop in Historic Tree Preservation. They or another organization could provide a similar training experience for the NCA to help its managers better understand their responsibilities when dealing with historic properties. Several useful publications include "Replacing Trees in Cultural Landscapes" (http://www.nps.gov/oclp/Clippings.pdf) and "Caring for Mature Trees in Historic Landscapes" (http://www.mass.gov/dcr/stewardship/histland/TerraFirma2.pdf).

Where trees have been lost, or must be removed in the future, it is essential that the NCA replace in kind using historically appropriate plant materials.

Trees are every bit as much a resource as the stones or monuments in a cemetery. As a result, all such vegetation should be carefully documented. An example of a documentation form is available at http://www.chicora.org/pdfs/Chicora%20Plant%20Documentation%20Form.pdf.

Landscape Grass

Grass does not perform well under many mature trees since generally grass will not grow well in areas with less than 50% open sunlight. This necessitates the use of alternative planting strategies. A guide to strategies can be found at http://www.treesaregood.com/treecare/trees_turf.aspx.

Improving the soil through the use of amenities and fertilization may help. This study reveals that the soils in the West Cemetery are significantly depleted and require fertilization. Fertilization does, however, require the judicious use of only organic materials and the careful avoidance of the high-salt levels associated with modern inorganic fertilizers.

New varieties of grass with improved shade tolerance may be considered.

There may be historic trees that have less dense foliage that may improve grass performance. Such trees may be an option when new plants are needed; it is *never* appropriate to remove a historic tree solely to permit the planting of a tree that may allow healthier grass growth.

It may be necessary to remove grass and install a 2-3 inch layer of mulch under the drip line of historic trees.

While grass may be the preferred vegetation in modern NCA cemeteries, it will not always be suitable for use in historic cemeteries and adjustments must be made.

It is worth noting that we are not recommending that grave mounds be re-established. While historic photographs and at least one historic account document their use, we do not believe they are sustainable.

Grass Maintenance

Many of the problems observed at West Cemetery can be attributed to the practices associated with grass maintenance.

A recent statement of work (VA-786-11-RP-0256) provides an example of the specifications used by the NCA for grass maintenance. Many aspects are standard. For example, a cutting height of 3 inches is established for cool season grasses with the stipulation that no more than 1½ inches of new growth may be removed by any single mowing. Many issues, however, are not discussed in sufficient detail.

For example, the specification warns perspective contractors to, "take the utmost care not to damage headstones, markers . . . while performing mowing services" and notes that contractors will be responsible for repairing any damage to monuments. However, no further advice, recommendations, or stipulations are offered.

The specifications also require that contractors change directions and mowing patterns to prevent turf wear. There is a specific provision that the contractor "shall vary mower wheel width patterns and mowing patterns after each mowing to prevent and avoid wheel rutting."

It seems a hollow threat to hold contractors responsible for damage to monuments when most NCA cemeteries have no stone-by-stone assessments and photographic documentation, thereby making it difficult to prove a contractor damaged a specific monument. Moreover, this provision requires a contracting officer that is routinely available and paying very close attention to the mowing activities.

Likewise, we have seen multiple NCA cemeteries where mowing patterns are uniform, resulting in deeply rutted topography. This suggests that this provision is also difficult to enforce. It is particularly difficult when NCA allows very large, and heavy, riding mowers in these cemeteries. Such equipment is far more likely to cause damage, create rutting, and in most cases makes it impossible to vary either "mower wheel width" or "mowing patterns."

Mower damage is abundant at West Cemetery and includes chips, impacts, scrapes, and breaks. The extent of damage indicates that it has been ongoing for a number of years *and is not exclusively attributable to the current contractor*. There is, in addition, evidence of rutting.

Recommendations to minimize mowing damage include the use of only 36 inch or smaller walk behind mowers since these are both easier to control and less likely to rut. Some areas will require the use of small 21 inch deck mowers. Mowers should be as light as possible and the tires should have as large a diameter as possible. Foam filled tires may further reduce rutting. While it is not always possible to vary mowing patterns, when smaller mowers are used it becomes possible to stagger the tracks. Even varying the track by 6 inches will help avoid rutting. Finally, the cemetery should never be mowed when the soil is wet.

In order to avoid damage to the stones, all mowers should be fitted with open or closed cell

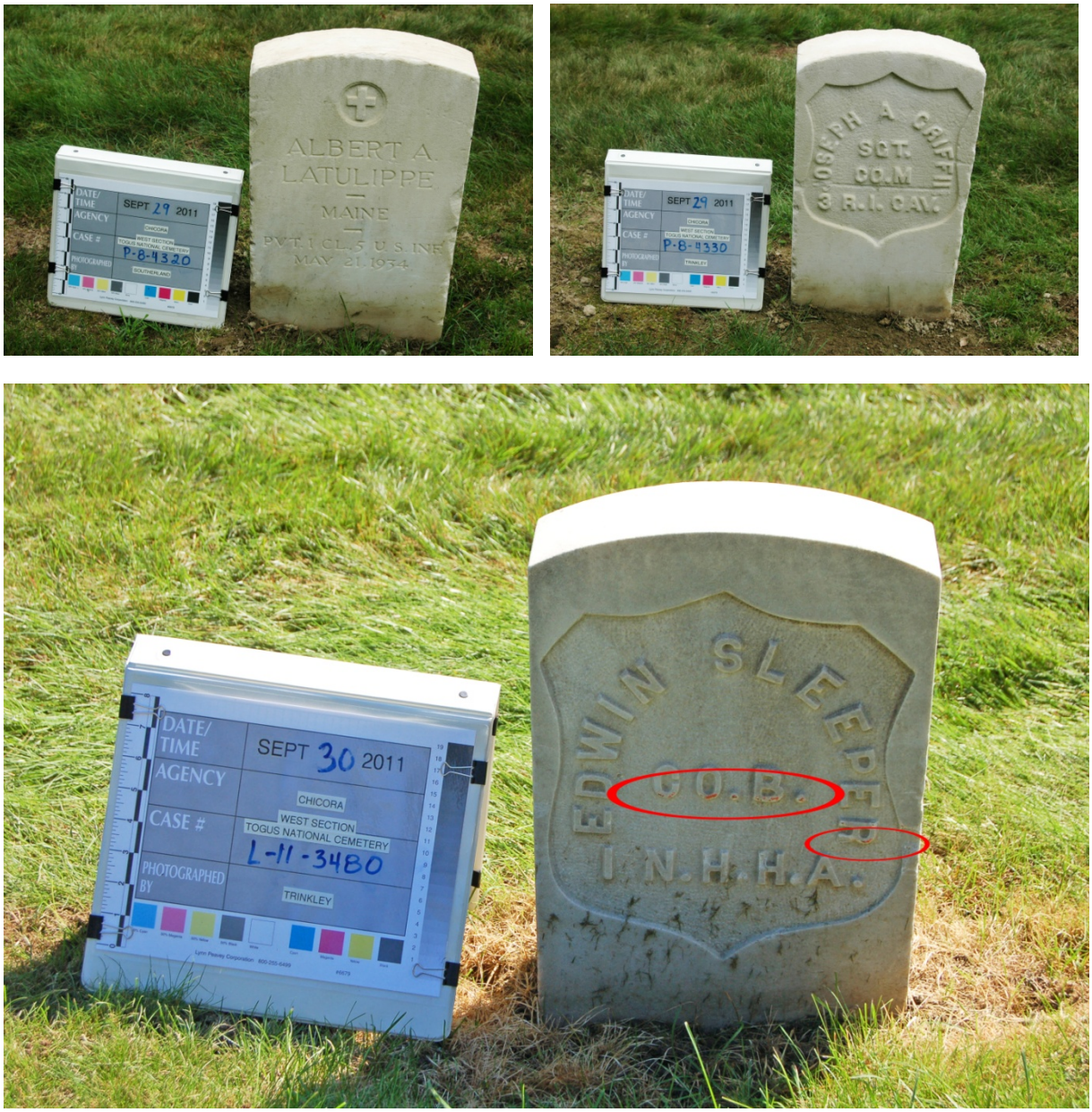


Figure 61. Examples of mower damage at West Cemetery. Upper left photo shows a stone with a wide variety of chips and edge damage resulting from mower impacts. Upper right photo shows a stone that has been scraped by a riding mower causing a linear gouge across the face of the stone, as well as the loss of several letters. Also present is edge damage from more "routine" bumps and impacts. The lower photo shows orange paint transfer from a mower.

foam bumpers. Bumpers should be inspected after each mowing to determine if stones have been struck.

It is good practice to never use mowers within 6 to 12 inches of stones. Finish work should be by nylon trimmer (see below).

The typical NCA grass maintenance contract specifies that trimming "shall occur around all individual upright headstones" with the contractor using "care to avoid contact with headstones, markers, monuments" and so forth.

While the specifications require that trimmings be removed from stones at the same time the work is being done, there is no guidance provided on how to avoid damage to historic monuments. This may be the result of NCA routinely replacing monuments. While this may be a suitable (if expensive) practice in modern cemeteries, it fails to fulfill the Secretary of Interior's Standards for historic cemeteries.

By establishing a zone 6-12 inches around every monument where nylon trimmers are required, contractors would have a better ability to accurately and fairly calculate costs. This buffer would also reduce much of the monument damage we see at West Cemetery.

Recommendations pertaining to the use of nylon trimmers to help ensure the preservation of stones are relatively straight-forward. Of primary consideration is that all trimmers use a string diameter no greater than 0.065". Heavier strings have a significantly greater potential to scar stones. All string that includes metal cores or other devices to "improve" cutting ability should also be avoided.

Re-Sodding

Based on a brief review it appears that NCA funds a number of "ground surface renovation and sod re-establishment" projects. While we can't be certain, it may be that many of these are related to overall poor maintenance practices.

For example, if soils are not appropriately tested and grass not adequately fertilized, if mowers are allowed to rut the cemetery, and graves are allowed to sink without maintenance, then the expense of re-sodding will eventually become necessary.

Such efforts at historic cemeteries, however, could be reduced, if not eliminated, through more careful and consistent maintenance activities – as described above.

Some of the re-sodding practices used are of particular concern at historic cemeteries and argue the need to reduce re-sodding to a fall-back practice.

For example, typical specifications call for the use of "glyphosate herbicide (RoundUp Pro or equal)." Roundup Pro® contains 41% glyphosate. In practice, we have seen the use of Monsanto Quick Pro at a historic cemetery. This product contains 73.3% glyphosate – nearly double that of the recommended product. Application pays no attention to the spraying of the historic markers (and arguably it is difficult, perhaps impossible, to apply without spraying the stones).

There have been at least three studies that clearly document the damage to masonry resulting from exposure to the glyphosate herbicide (Cook 1989, Dewey 1999, and Fearn 1978). All reveal essentially similar results with the stone or masonry suffering from salt crystallization (efflorescence), change in the pH of the material, pitting of the surface, and accelerated deterioration.

Combined with the potential damage from the herbicide, cemeteries that are resodded may also have stones removed from their original location – resulting in handling that can cause damage or breakage – as well as ground compaction – which can result in damage to archaeological resources.

There are clear and definite reasons to avoid resodding in historic cemeteries. It would be more appropriate to fund proper maintenance activities that preserve existing sod than to fund

the replacement of damaged sod.

Cleaning of Stones

The NCA defines clean as "NO discoloration, environmental deposits, mold, mildew, moss, algae, lichen, dirt/mud, grass clippings, grass marks, bird droppings, etcetera [emphasis in original]" (VA-786-11-RP-0379).

We question whether such a definition is reasonable for any monument, but especially historic stones.

The world's foremost authority on cleaning masonry, Nicola Ashurst warns,

> Stone cleaning should never be expected to return a façade to its original colour or state. In the years since its erection, a building will have soiled, weathered, decayed and developed patinas on the stone surfaces, changing in many irreversible ways (Ashurst 1994:15).

She further notes that "a range of degrees of cleaning must be expected." None of these critical principals appear to be recognized by the NCA cleaning specifications.

It is also important to understand that while not all soiling is detrimental to the long-term preservation of a stone, virtually all cleaning runs the risk of causing damage that is not already present. The simple reality is that we too often over clean stone, causing damage. There is no excuse for improper cleaning or over cleaning. As a National Shrine, it is important that all possible steps be taken to ensure the protection of the historic markers.

The NCA specifications call for water cleaning using a pressure under 600 psi, followed by two "heavy spray applications (with 7 calendar days time separation between each application)" of D/2, a quaternary ammonium biocide. These specifications are inappropriate for historic stone, revealing that even good products can be incorrectly used.

As a result of a study ongoing since 2004, NCPTT has recently provided *Best Practice Recommendations for Cleaning Government Issued Headstones*, available at http://ncptt.nps.gov/wp-content/uploads/Best-Practices-Final.pdf.

NCPTT recommends avoiding any pressure above 500 psi. We are even more cautious. In our 20 years we have seen very few situations where any pressure over 90psi (that from typical municipal water supplies) is necessary. The use of high pressure may be a convenience to contractors, but it is capable of causing significant damage to sugaring or already eroded stones.

Figure 62. Use of a power washer on the oldest stones in the West Cemetery. There is no "safe" pressure above 90 psi. The gun is being held too close to the stone, even with the use of a fan tip.

Figure 63. Examples of soiled stones at West Cemetery. Upper left shows algae. This can be readily removed by D/2 and likely will not return for 3-6 months. Upper right shows a bird dropping; while readily removed there is no control over this sort of soiling. Middle left shows dark stain that may be atmospheric soiling, which results from atmospheric pollutants. The middle right photo shows how this staining is partially removed by acid rain. Lower left photo shows grass adhering to the stone after the use of a nylon trimmer. The stone also exhibits algae growth. The lower right photo shows soil splash-back. With no grass growing after a "bump and run," this sort of soiling will occur after every rain.

In addition, D/2 should not be applied to a stone without pre-wetting. A light scrubbing is typically useful, but not always necessary. The stone should then be rinsed to remove the cleaning product.

We do not know where the NCA specification seen in this one contract has come from, but it should be replaced with the best practices developed by NCPTT specifically for government stones.

Resetting Stones

At West Cemetery the current maintenance contract calls for 100 resets a year, coupled with 300 of what are called "bump and runs."

Resets involve removing the stone completely from the ground and resetting it plumb and in-line with other stones. At this cemetery resets are accomplished using a device that is attached to the stone and then winches it out of the ground. The stone is reset using existing soil; no gravel or other fill is used.

In contrast, bump and runs are when the stone is slightly excavated and simply made plumb without any effort to also raise the stone to the correct height. In our observations stones were straightened by "bumping" them using a wood tool. This is apparently a common practice since we have a video showing the practice at the Fort Sam Houston National Cemetery (http://www.dvidshub.net/video/31238/air-force-report-bump-and-run#.TyG82oGt2dk).

There are multiple problems using these techniques at historic cemeteries and both practices can be very damaging to stones.

Figure 64. Black rubber stain on the reverse of a reset stone. Note also that the hole was not adequately refilled, creating a dished area that holds water and creates additional splash back and erosion.

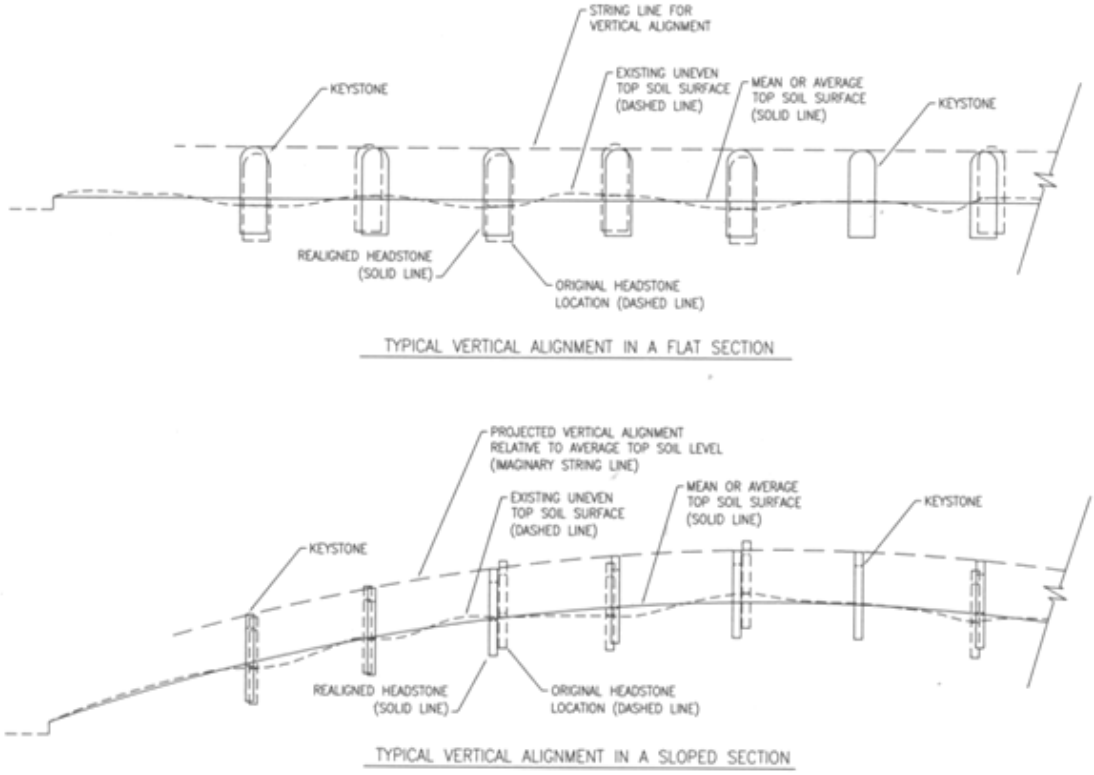


Figure 65. NCA typical alignment of stones on uneven or sloping terrain.

At West Cemetery we observed stones that were stained from the use of black rubber pads to grip the stone during resetting (Figure 64). Only white rubber should be used to prevent this sort of staining.

Resetting must also completely refill and tamp the soil around the stone in order to prevent a low area that will serve to retain water next to the stone.

At the West Cemetery we also observed that the contractor's crew had not been given detailed instructions on how to set monuments on slopes. Not having any guidance they decided to "step" the stones, gradually raising them up the slope. This is a distinctly different approach than appears to be advocated by the NCA: "In irregular terrain where sloping and uneven ground conditions exist, all headstones and markers will be set at proper heights and levels to provide a flowing transition through uneven terrain" (see Figure 65; VA-786-11-RP-0379).

We mention this problem since every time a stone is handled there is a risk of damage. Thus, it is critical that the handling of stones, especially historic stones, be minimized. To achieve this it is critical that contractors have clear instructions on how to reset stones without causing damage or needless handling.

Of special concern is the practice of "bump and run." While we were assured that contractors were never to physically "bump" stones, we believe that this is, in fact, the common practice. Stones can be easily broken, cracked, or chipped using this technique.

In addition, we question the usefulness of straightening a stone without also raising it. Figure 66 shows several stones that received "bump and run" adjustments at West Cemetery but which remain sunken. In some cases the stones that received "bump and run" adjustments had to be excavated by us in order to fully read the stone. We do not understand how these adjustments fulfill the goal of ensuring a "National Shrine." It would be better for such stones to remain untouched than to subject them to multiple episodes of rough handling. We recommend that no future "bump and run" adjustments be conducted at historic cemeteries. The effort – and funds – should instead be spent on resets, thereby handling the stone only once.

Contracting Officer Involvement

For these, or other, recommendations to be successful, it becomes critical that the NCA be proactive in the oversight of maintenance at historic cemeteries such as those at Togus. *Nothing compares to having the contracting officer on the ground actually observing typical maintenance activities.* While we understand this may be difficult given the number of cemeteries for which NCA is responsible, it becomes critical for historic cemeteries such as West Cemetery.

We recommend that periodic reviews be conducted by the NCA contracting officer, especially while work is actually being performed. In addition, it may be appropriate to retain a conservator for 1 or 2 days to periodically review

Figure 66. Examples of "bump and run" stones that remain sunk and partially obscured. Since these stones clearly require resetting, it would be better not to conduct this sort of partial reset on historic stones. While most are legible, the lower left stone required excavation in order to transcribe the information. The lower right photo shows excavation of a stone that had recently been "bumped and run" but was still so low that the inscription was not visible.

contract activities at historic cemeteries.

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Cemetery Preservation Plans

Historical Research

Identification of Grave Locations and Mapping

Condition Assessments

Treatment of Stone and Ironwork

Chicora Foundation, Inc.
PO Box 8664 ▪ 861 Arbutus Drive
Columbia, SC 29202-8664
Tel: 803-787-6910
Fax: 803-787-6910
www.chicora.org